SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Sacramento Metropolitan Air Quality Management District

2009 WOOD BURN AWARENESS SURVEY

FINAL REPORT

MAY, 2009

SUBMITTED BY:

DAWN MORLEY CHAVERO &

NAOMI E. HOLOBOW, PH.D.

FOR

AURORA Research Group

2618 Stoughton Way, Sacramento, CA 95827
www.auroraresearchgroup.com
(916) 363-8682

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EXECUTIVE HIGHLIGHTS (3 PAGES)

These conclusions are based on the results of a random-digit-dial (RDD) telephone survey conducted with a random sample of Sacramento County residents who owned wood burning devices in March and early April 2009.

Wintertime Air Quality Issues

- **Nearly six in ten (59%) Sacramento County respondents with wood burning devices acknowledged that residential wood burning was a serious cause of wintertime air pollution.**
  - *There appears to be a move in the right direction in terms of improved understanding, with a 5% increase over the 2007 survey results, although this is not statistically significant.*
  - *Significantly more females than males rated residential wood burning as a serious pollution problem.*
- **However, residential wood burning was not felt to be as serious a problem as traffic in contributing to wintertime air pollution.**
  - *The most serious cause of wintertime air pollution was viewed to be traffic (32% rated it a "very serious" contributor), followed by industry (19%) agricultural burning (15%), and finally residential wood burning (12%).*
  - *Results this year are generally similar to those found in 2007.*
  - *Significantly more females than males rated traffic and industry as serious causes of pollution. Caucasians were less likely than other ethnicities to rate industry and agricultural burning as serious causes of wintertime air pollution.*
- **Approximately seven in ten respondents considered themselves to be knowledgeable about particulate matter (PM) pollution, although only 12% of these felt "very" knowledgeable.**
  - *In terms of overall knowledge of PM pollution, the current results were similar to the results found in the 2007 survey.*
  - *Older respondents were noticeably more knowledgeable than younger respondents, highlighting a need for better informing younger residents about PM pollution. Knowledge about PM pollution also varied by gender, household size, education, ethnicity, and income.*

Wood Burning Activity

- **By study design, all respondents had at least one wood burning device in their home, the majority (83%) of which included an indoor fireplace.**
  - *The type of wood burning devices found in homes remains unchanged since 2007.*
  - *Only a third of fireplace inserts (36%) and wood or pellet stoves (33%) were EPA-certified or pellet devices and 18% of all respondents had heard about the Change Out Incentive Program.*

- **Fifty percent (50%) of all respondents did not use their wood burning device last winter. Among those who did, the majority burned wood, pellets or manufactured logs less than once a week.**
  - *Significantly fewer wood burning device owners lit up at least once during the 2008-09 winter season (50%) than two years ago (64% in the 2007 survey).*
  - *Fewer burners in 2009 than in 2007 were lighting a fire on "most nights" while more are burning wood "mainly on weekends." There was a slight drop in the total proportion of burners who lit fires at least once a week (from 58% in 2007 to 54% in 2009), although the difference was not statistically significant.*
  - *Respondents who burned wood, pellets, or manufactured logs this past winter were more likely than those who did not to have access to the Internet, have some post secondary education, and live in wealthier households.*
- **Forty-five percent (45%) said they burned <u>less</u> this past winter compared to a typical winter. Of these, one in five (21%) attributed the decrease to the existence of No Burn days. Combined with the 12% who were motivated to reduce their wood burning behavior because of air quality reasons, and the 2% who cited health-related reason, a total of 35% chose to burn less last winter in order to help decrease wintertime air pollution.**
  - *The 5% who burned more wood, pellets and manufactured logs this winter did so because they felt it was cheaper than the heater, had wood, and felt that this winter was colder than normal.*

<u>Awareness of the Check Before You Burn Program</u>

- **The outreach messages have been successful in reaching the population: three in four (76%) respondents recalled the No Burn day messages that notified them not to burn wood (unaided awareness).**
  - *Name recognition of Check Before You Burn is also high, with 72% claiming to be somewhat or very familiar with the Check Before You Burn program. However, not everyone was able to accurately describe it.*
- **The program has already achieved successful visibility: when results of the unaided and aided awareness questions were combined, overall, 92% of all respondents were aware of the Check Before You Burn program.**
- **In terms of awareness of different levels of the program, approximately seven in ten respondents (74%) who were aware of Check Before You Burn were also aware of the Burning Discouraged, Burn Cleanly and Stage 2- All Burning Prohibited levels.**
- **However, recognition of the Stage 1 - No Burn Unless Exempt level was much lower, at just over half (54%) of these respondents. Although it could be attributed to the lower level of exposure to that level (there were fewer actual Stage 1 No Burn days), program organizers might want to consider increasing efforts aimed at educating the public specifically about Stage 1 requirements. Alternatively, they might also consider eliminating the Stage 1 category altogether in order to reduce confusion.**
  - *There were very few demographic features that distinguished those aware of each of the levels from those not aware, indicating that the program can continue to be aimed at the general population rather than targeting specific groups of individuals.*

- **The majority of respondents (71%) recognize that it is their responsibility to see if it is permissible to burn wood and nearly half (47%) of the respondents who were aware of the Stage 1 and Stage 2 levels knew that it was illegal to burn manufactured logs on Stage 1 and Stage 2 No Burn days.**
  - *Demographically speaking, there was no difference between those who were aware of the program details, such as the requirement to check before burning and the prohibition of manufactured logs being used in fireplaces during Stage 1 and Stage 2 No Burn days, and those who were not.*

Compliance with the Check Before You Burn Program

- **Compulsory measures appear to be more effective than voluntary requests: among those who were aware of each level, compliance with all Stage 1 and Stage 2 No Burn days was significantly higher (at nearly 90%) than voluntary compliance when burning was simply discouraged (only 26%).**
- **In terms of the total base of respondents (all of whom owned wood burning devices), 32% complied with every voluntary Burning Discouraged request, 42% complied with every Stage 1-No Burn Unless Exempt directive; and 52% complied with all Stage 2-All Burning Prohibited days. In other words, compliance increased as the level of restrictions increased.**
  - *Compliance was relatively independent of demographics -- there were only three features that distinguished compliers from others within each level of the program: home owners, those older than 35 years of age, and those whose ethnicity was Caucasian were more likely to comply.*
  - *Among EPA-certified device owners only, compliance with Stage 1 No Burn Unless Exempt days was just as high as it was for Stage 2 days, even though they were legally allowed to burn on Stage 1 days.* ***This indicates that there was no advantage to keeping Stage 1 and offers additional support for considering the possible elimination of Stage 1 from the program entirely****.*

Communication Channels

- **Using news media to announce No Burn days is an effective communication channel: the vast majority of respondents aware of the program heard about the No Burn days on television and radio (85%), followed by newspapers (58%).**
  - *The general news media was also the preferred communication channel identified in the 2007 baseline survey.*
  - *How respondents heard about whether or not they could burn wood was relatively independent of demographic features, indicating once again that the public education campaign can continue to be aimed at the population in general to be effective.*

PROJECT BACKGROUND & OBJECTIVES

The mission of the Sacramento Metropolitan Air Quality Management District (SMAQMD) is to protect public health and the environment through innovative and effective programs that aim to improve air quality in Sacramento County. The winter season program runs from November 1 to February 28 and focuses on reducing the amount of fine particulate matter (PM) pollution that is caused by burning wood in fireplaces, woodstoves, and outside fire pits and chimeneas. The Check Before You Burn program has been in place since 2007 and expects residents to inform themselves of the day's burn status before they consider burning wood, pellets or manufactured logs. It consists of four stages as illustrated in Table 1.

Table 1

PROGRAM LEVEL	DESCRIPTION	# OF OCCURRENCES IN 2008-09 SEASON[1]
	*The public is allowed to burn and the burning of manufactured fire logs is acceptable.*	54
	*Residents are requested to voluntarily not burn and the burning of manufactured logs is acceptable.*	28
	*Burning is <u>prohibited</u> unless EPA-certified wood burning or pellet devices are used. Manufactured fire logs in fireplaces are banned from use.*	10
	*Burning of <u>any</u> solid fuel, including wood, manufactured logs and pellets, is prohibited.*	28

[1] The specific number of occurrences at each program level was provided by Marc Cooley, Air Quality Engineer for the Sacramento Metropolitan Air Quality Management District in an e-mail received on April 29, 2009. The number of Burn Cleanly days was calculated by subtracting the number of Burning Discouraged, Stage 1 and Stage 2 days from the total number of days in the season (November 1 to February 28).

The current study was designed to conduct interviews with a representative sample of Sacramento County residents who own an indoor or outdoor wood or pellet burning device to assess public awareness, perceptions and behavior. More specifically, the objectives of this study were to assess:

- Wood burning activity,
- Overall awareness of the Check Before You Burn program,
- Message awareness and whether or not residents distinguish the various stages of the program,
- The effectiveness of the current program,
- The comparison of current results with the 2007 baseline survey results (when appropriate), and
- Relevant demographic information.

RESEARCH METHODOLOGY

Aurora Research Group was contracted to conduct this public opinion research study. For this study, random-digit-dialed (RDD) telephone interviews were completed with a representative sample of 400 Sacramento County residents who owned a wood burning device either inside or outside their home.

The margin of error for the study as a whole was + or – 4.9%, at the 95% confidence level. In other words, we are 95% sure that the true population parameters lie within +/- 4.9% of the sample statistics. As an example, if a response category to a question were chosen by 50% of respondents, we would be 95% sure that the true population parameters would be between 45.1% and 54.9% (50.0% +/- 4.9%).

Using the 2007 survey as a first draft, Aurora Research Group designed the questionnaire which addressed the previously-mentioned objectives, and SMAQMD staff approved the final survey. Most of the questions were asked in a closed-ended format, but two questions were asked as open-ended. Verbatim responses were captured and later categorized for quantitative analyses. (Transcripts of all the verbatim responses will be provided in the statistical binder). The questionnaire was translated into Spanish and 2% of the general base study interviews were conducted in Spanish. The questionnaire was programmed for a CATI system and interviews took approximately 14 minutes on average to administer. Respondents were screened for age (adults at least 18 years old[2]), ownership of a wood burning device (indoor or outdoor) and to confirm residency in Sacramento County. Interviewing took place between March 26 and April 9, 2009.

Methods of Analysis

Survey results were analyzed using univariate and bi-variate statistical techniques. The type of analysis depended upon the kind of variable analyzed and the hypotheses that were generated through an examination of the initial results. Unless otherwise noted, frequency

[2] In order to speak with someone under 18 years of age, by law we would need to get the parents' written permission.

percentages cited in this document represent *adjusted* frequencies, meaning that percentages have been adjusted to account for any non-responses (refusals to answer) or non-qualified responses (questions not answered due to answers to previous questions).

Researchers are interested in assessing whether or not the differences in observed percentages between certain groups of individuals are due to chance, or if they represent real differences among the subpopulations. Differences are identified by running statistical analyses and are discussed in the report. Statistical significance within crosstabulation tables was calculated using chi square ($\chi 2$) statistics. Tests of proportion were used to identify differences in responses between questions or groups of respondents. The level of significance was generally set to a p value of .01.

Caveat:

The sole purpose of this report is to provide a collection, categorization and summary of public opinion data. Aurora Research Group intends to neither endorse nor criticize the Eastern Research Group, Inc (ERG) or Sacramento Metropolitan Air Quality Management District; or their policies, products, board of directors or staff. The Client shall be solely responsible for any modifications, revisions, or further disclosure/distribution of this report.

RESULTS & CONCLUSIONS

The survey results are organized and presented as follows: wintertime air quality issues, knowledge of particulate matter, wood burning activity, awareness of and compliance with the Check Before You Burn program, and the use of communication channels. Within each section of the report, the current survey results (of wood burning device respondents) are first presented. Next, the current results are compared with the results of the baseline survey conducted in 2007 with a representative sample of Sacramento County residents, who owned or did not own wood burning devices. Finally, any statistically significant group differences due to demographic characteristics (age, income, ethnicity, gender, internet access, the number of people living in the house, home ownership, Air Alert subscription, or education[3]) are presented. In other words, up to nine separate cross-tabulations will have been conducted for each question. If no group results are described, it is an indication that there were no significant differentiators for a particular question. Unless otherwise specified, the reported results exclude responses of "undecided" as well as refusals. The order of topics presented in the report was chosen as the most logical in terms of meeting the information requirement objectives of the study and does not necessarily conform to the order of the questions within the survey.

Wintertime Air Quality Issues

Residential Wood Burning Fireplaces

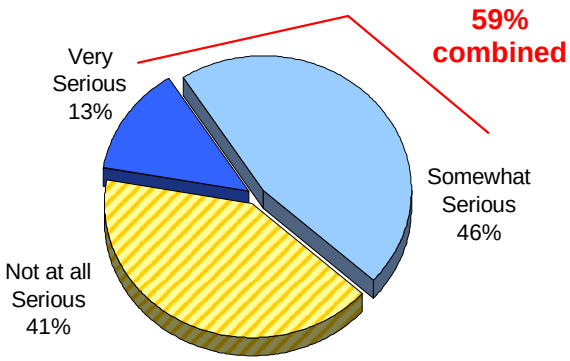
CURRENT RESULTS

- ***1 Nearly six in ten (59%) Sacramento County respondents with wood burning devices acknowledged that residential wood burning was a serious cause of wintertime air pollution.***

  Respondents were asked to rate the seriousness of wintertime air pollution caused by residential wood burning fireplaces. Results, excluding responses of undecided/don't know, are presented in Figure 1. It can be seen that nearly half (46%) thought it was a "somewhat" serious problem and a further 13% said it was a "very" serious problem, for a combined total of 59% of respondents who acknowledged wood burning to be a serious cause of air pollution. However, it can also be seen that about four in ten respondents (41%) thought residential wood burning was <u>not</u> a serious contributor, indicating an ongoing need for public education.

[3] The reader is referred to the demographic characteristics section near the end of this report to see how the demographics were categorized.

FIGURE 1 – SERIOUSNESS OF WINTERTIME AIR POLLUTION CAUSED BY RESIDENTIAL WOOD BURNING FIREPLACES



COMPARISON WITH PREVIOUS RESULTS

❖ ***2 There appears to be a move in the right direction in terms of improved understanding – 5% more owners of wood burning devices this year than in 2007 rated residential wood burning as a serious cause of wintertime air pollution. However, this is not statistically significant.***

Two years ago (in 2007) respondents[4] were asked the same question about residential wood burning. Results indicated that, among those who owned a wood burning device, a combined total of 54% respondents in 2007 compared with 59% this year felt that residential wood burning was a serious cause of wintertime air pollution – a 5% increase. These results, although not statistically significant, nevertheless indicate a move in the right direction in terms of public education.

GROUP DIFFERENCES

❖ ***3 Significantly more females than males rated residential wood burning as a serious pollution problem.***

To see if there were any features that distinguished those respondents who said residential wood burning was not a serious cause of wintertime air pollution from those who said it was, results were dichotomized (percent "not at all serious" versus percent "somewhat + very serious"), and a series of chi-square analyses was conducted. Variables included in the analyses included: age, income, education, gender, ethnicity, home ownership, number of people in household, access to the internet, and Air Alert subscription.

[4] It should be noted that respondents in 2007 represented the general population of Sacramento County and included both wood burning households as well as non wood burning households. In order to make an appropriate comparison, we recalculated the 2007 results to include only those who had a wood burning device. In 2009 we spoke with only respondents who had wood burning devices.

Only one feature showed a significant difference: gender. Significantly more **females** (66%) than males (55%) thought residential wood burning was a serious cause of air pollution. No other demographic characteristics emerged: neither ethnicity, education, age, internet access, the number of people living in the house, nor whether or not they subscribed to Air Alerts were significant. In other words, older residents were just as likely as younger residents to say wood burning was a serious issue or not; better educated respondents responded similarly to less educated ones, etc.

In short, because there were so few demographic differences, a public education campaign dealing with the sources and seriousness of wintertime air pollution that is designed to target residents of all descriptions in Sacramento County should be effective. However, if there were a way of educating males in particular about the pollution problems associated with wood-burning, there could be added benefits, as they demonstrated a significant information gap compared with females.

Additionally, although not surprising, those who burned wood, pellets, or manufactured logs (50%) at least once last winter were significantly more likely than those who refrained (33%) to say that wood burning pollution was not a serious contributor to poor wintertime air quality.

Seriousness of Other Causes of Air Pollution

CURRENT RESULTS

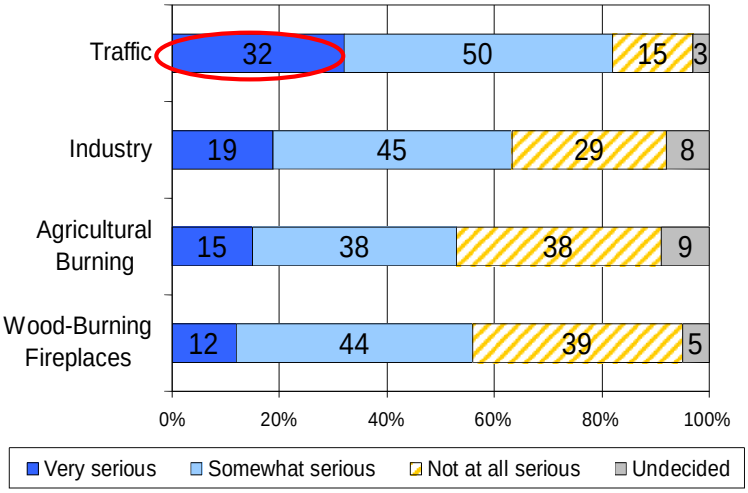
- ***4 The most serious cause of wintertime air pollution was viewed to be traffic (32% rated it a "very serious" contributor), followed by industry (19%), agricultural burning (15%), and finally residential wood burning (12%). In other words, residential wood burning was not felt to be as serious a problem as traffic in contributing to wintertime air pollution.***

In addition to residential wood burning fireplaces, respondents were also asked to rate how traffic, industry, and agricultural burning contributed to wintertime air pollution. Results, including responses of undecided/don't know[5], are presented in Figure 2. It can be seen, first of all, that traffic was considered to be the **most** serious cause of wintertime air pollution: approximately one third of respondents (32%) said it was a "very" serious problem. Only 19% of all respondents felt that industry was to blame and 15% felt that agricultural burning was responsible. Residential wood-burning fireplaces were seen as the **least** serious causes of wintertime air pollution: only 12% rated wood-burning as "very" serious.

[5] Typically, in attitudinal surveys, the percentage of undecided/don't know responses is low (between 0% and 4%). We chose to present the percentage of undecided/don't know responses in Figure 2 because two questions resulted in a relatively high percentages (8% and 9%) of respondents saying they did not know, a volunteered response rather than an actual response category. **These indicate specific areas where more public education on the causes of wintertime air pollution (industry and agricultural burning) could be beneficial.**

This indicates that further public education about the causes of wintertime air pollution is warranted. It also attests to the ability of successful public education campaigns to influence public perceptions, insofar as the majority of the general population understands that traffic causes air pollution, regardless of the season. For example, in the Sacramento area, the summertime Spare The Air program has been in effect since 1995 and, although it is not the only source of education, it is now highly recognizable among the local population in general.[6]

Figure 2 – Seriousness: Source of Wintertime Air Pollution
(includes undecided responses)



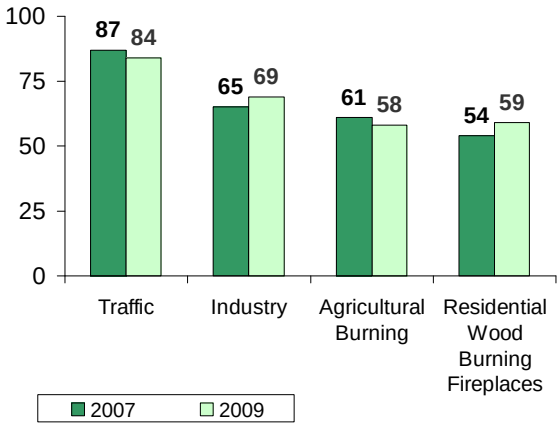
COMPARISON WITH PREVIOUS RESULTS

❖ ***5 Results this year are generally similar to those found in 2007 with among respondents who owned a wood burning device.***

In order to compare this year's results with those from 2007, the undecided responses as well as the responses from non wood burning device owners were eliminated and percentages were recalculated. The combined responses of "somewhat" plus "very serious" for each source of wintertime pollution in both survey years are presented in the next chart. It can be seen that, in general, results are very similar – traffic in both years was viewed as the most serious contributor to pollution in both 2007 and 2009. As previously mentioned, there is a 5% increase in the percentage of respondents who said residential wood burning was a serious polluter, but the difference is not statistically significant.

[6] See: SMAQMD 2008 Air Quality & Transportation Telephone Tracking Survey, Aurora Research Group, January 2009: nearly three quarters (74%) of all respondents were familiar with the summertime Spare The Air program.

Figure 3 – Seriousness: Source of Wintertime Air Pollution by Survey Year
(Somewhat + Very Serious Combined; Excludes undecided responses among wood burning device owners)



GROUP DIFFERENCES

❖ ***6 Significantly more females than males rated traffic and industry as serious causes of pollution. Caucasians were less likely than other ethnicities to rate industry and agricultural burning as serious causes of wintertime pollution.***

A total of 27 chi-square analyses (3 questions x 9 demographic features) were run to see if there were any demographic features that distinguished those who rated the causes of wintertime air pollution as serious from those who did not. There were only a few analyses that yielded significant differences:

- females were significantly more likely than males to say that traffic (88% vs. 80%) and industry (75% vs. 62%) were serious causes,
- respondents less than 55 years of age were more likely than those older than 55 to say that industry was a serious cause of winter air pollution (78% vs. 59%), and
- non-Caucasians were more likely than Caucasians to say that industry (82% vs. 64%) and agricultural burning (74% vs. 55%) were serious polluters.

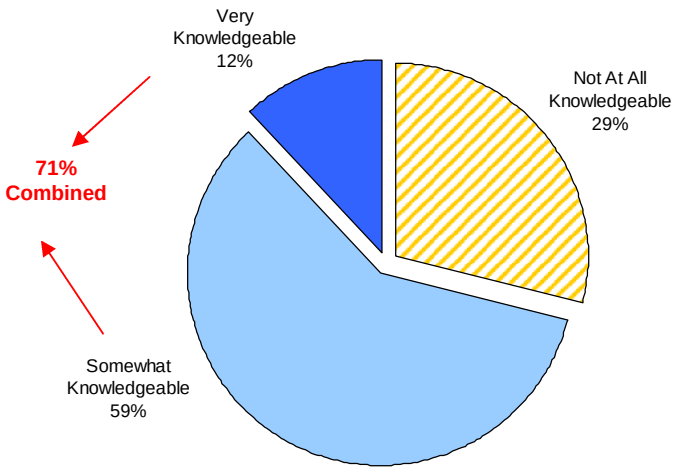
Knowledge of Particulate Matter

CURRENT RESULTS

❖ 7 ***Approximately seven in ten respondents considered themselves to be knowledgeable about PM pollution, although only 12% of these felt "very" knowledgeable.***

The survey asked respondents to rate their level of knowledge of particulate matter or PM pollution, using a three-point scale. Results are shown in the next pie chart. About six in ten respondents (59%) reported being "somewhat" knowledgeable, and a further 12% said they were "very" knowledgeable, for a combined total of 71%. Conversely, 29% did not feel they knew anything about the subject. There were no undecided responses.

FIGURE 4 – KNOWLEDGE OF PM POLLUTION

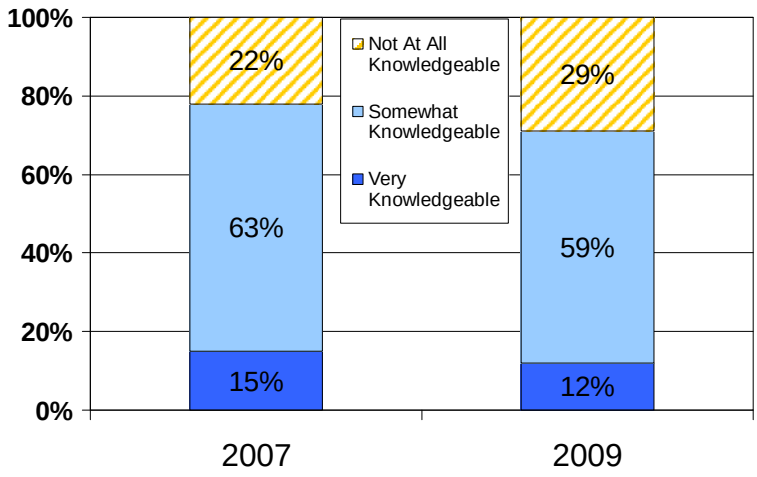


COMPARISON WITH PREVIOUS RESULTS

❖ 8 ***In terms of overall knowledge of particulate matter pollution, the current results were similar to the results found in the 2007 survey.***

The question about knowledge of PM pollution was also asked in the 2007 baseline survey. The next figure compares current results with those from the two years ago (respondents with wood burning devices only). There were no statistically significant differences between the two years – respondents' levels of knowledge of PM pollution were generally similar.

FIGURE 5 – KNOWLEDGE OF PM POLLUTION BY SURVEY YEAR



GROUP DIFFERENCES

❖ ***9 Knowledge about PM pollution varied by many demographic features – gender, household size, age, education, ethnicity, and income. Older respondents were noticeably more knowledgeable than younger respondents, highlighting a need for better informing younger residents about PM pollution.***

Results were dichotomized (responses of "somewhat" knowledgeable were combined with "very" knowledgeable vs. "not at all" knowledgeable) and chi-square analyses were run to see if there were any demographic features that distinguished those who claimed to be knowledgeable about PM pollution from those who were not. Many differences emerged:

- males were significantly more likely than females to say they were knowledgeable (77% vs. 66%),
- respondents living in households with one or two people were more knowledgeable than households with three or more members (79% vs. 63%),
- older respondents were more knowledgeable than younger ones (**85% of those 65 and older**; vs. 75% of those between 45 and 64 years of age; vs. 65% of those aged between 35 to 44; vs. only **34% of those under 35 years)**,
- better educated respondents were more knowledgeable than less educated (80% of those with college degrees vs. 60% with high school or some college),
- Caucasian respondents claimed more knowledge than non-Caucasians (78% vs. 51%), and

- wealthier households were more knowledgeable than less wealthy (79% of those with household incomes of over $100,000 vs. 67% of those in households earning less than $100,000 per year).

Wood Burning Activity

Inventory

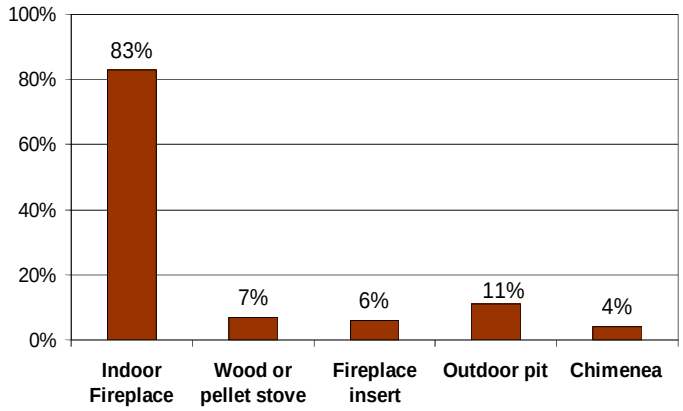
CURRENT RESULTS

❖ ***10 By study design, all respondents had at least one wood burning device in or outside their home, the majority (83%) of which included an indoor fireplace. However, only a third of wood or pellet stoves (33%) or fireplace inserts (36%) were reported to be EPA-certified.***

The sampling design included only those Sacramento County residents who owned either an indoor or an outdoor wood burning device. As a follow up to the screening question, a series of questions was asked to determine the types of devices owned. Each respondent was asked about each device and, as a result, the results in the following chart do not sum to 100%. It can be seen that most homes (83%) were equipped with an indoor fireplace. Other less common indoor devices include wood or pellet stoves (7%) and fireplace inserts (6%).

In terms of outdoor devices, 11% said they had an outdoor pit, and a few respondents reported owning a chimenea (4%).

FIGURE 6 – TYPE OF WOOD BURNING DEVICE
(AMONG ALL RESPONDENTS)

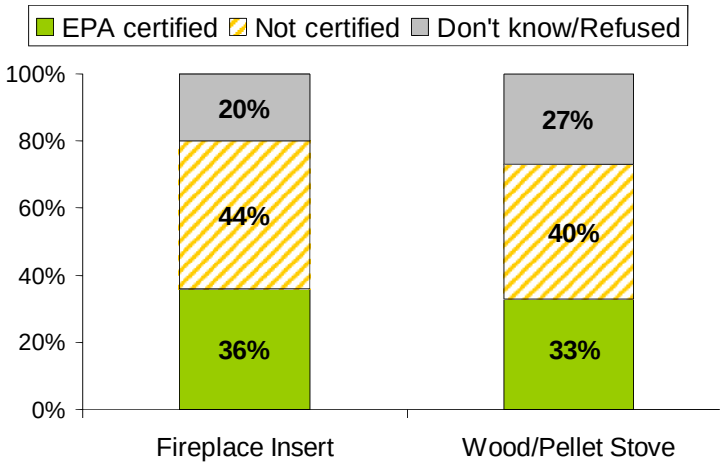


All respondents were asked if their wood burning or pellet burning device was certified by the Environmental Protection Agency (EPA) or not. Overall, only 11% of all respondents said their device was EPA-certified. The remaining majority either said it was not (62%) or were unsure (27%).

Then the results were examined by type of device and these results are shown in the next chart. It can be seen that the one third of the wood burning

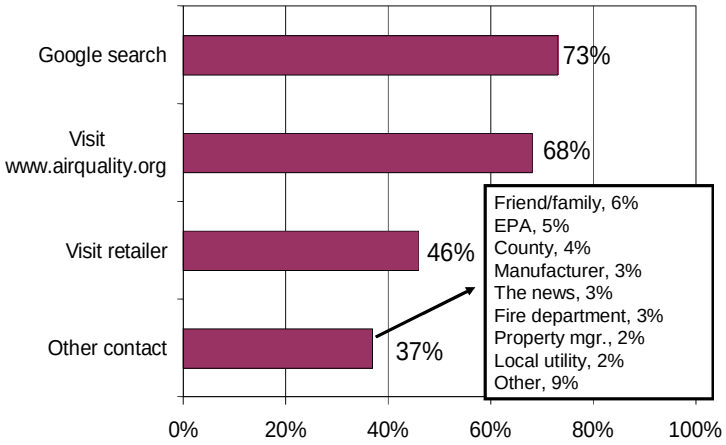
devices were EPA-certified among fireplace insert owners (36%) and wood or pellet stove owners (33%).

FIGURE 7 – INCIDENCE OF EPA-CERTIFIED WOOD BURNING DEVICES



Respondents were then asked a series of follow-up questions aimed at identifying how someone would find out whether or not a wood burning device was EPA-certified. In general, the majority of those surveyed said they would search online, either by conducting a Google search (73%) or visiting the District's web site (www.airquality.org) (68%). Almost half said they would visit a retailer in the industry (48%). The results are shown in the next chart.

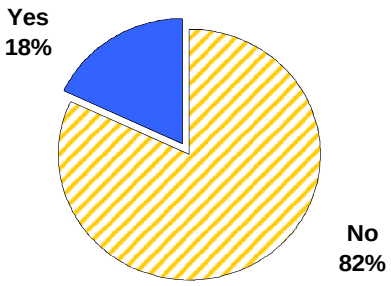
FIGURE 8
TO FIND OUT IF WOOD BURNING DEVICE IS EPA-CERTIFIED, WOULD YOU…



❖ ***11 Only 18% of all respondents had heard about the Change Out Incentive Program.***

All respondents were asked if they had heard about the Change Out Incentive Program, which provides funding to help Sacramento County residents replace older, more polluting wood stoves and fireplaces with cleaner-burning, EPA-certified or equivalent units. Only 18% said they were familiar with the program, while eight in ten said they had not heard of it.

FIGURE 9 – AWARENESS OF CHANGE OUT INCENTIVE PROGRAM
(EXCLUDING 1% OF UNDECIDEDS)



COMPARISON WITH PREVIOUS RESULTS

❖ ***12 The type of wood burning devices found in homes that have wood burning devices remains unchanged since 2007.***

Additional analyses compared the types of wood burning devices found in homes in 2007 and 2009. In 2007, this question was asked of the general population. In order to conduct a year-to-year comparison, the respondents who did not have a wood burning device in the 2007 were excluded and the percentages were recalculated. Results indicated that 80% of those who owned a wood burning device in 2007 had an indoor fireplace, which is very similar to the 83% found in the 2009 survey.

Usage of Device

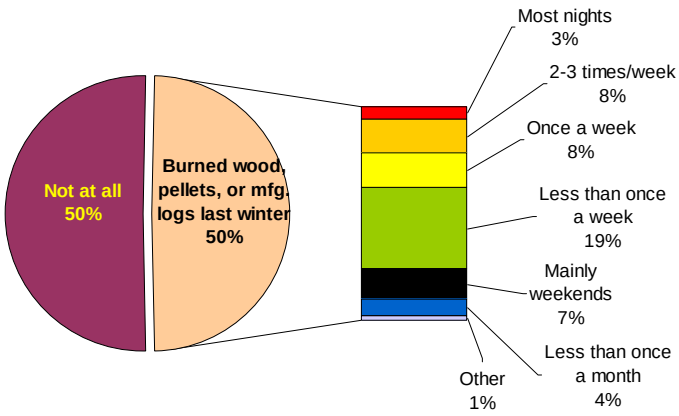
CURRENT RESULTS

❖ ***13 Fifty percent (50%) of all respondents did not use their wood burning device last winter. Among those who did, the majority burned wood, pellets or manufactured logs less than once a week, while 19% burned at least once a week.***

Respondents were asked about the frequency of burning wood last winter and the results are shown in the following graph. First of all, it can be seen that half of those surveyed said they did not burn wood, pellets or

manufactured logs at all between November 2008 and February 2009. Among those who did, the largest group (30%) burned wood less than once a week (the 19% who said less than once a week plus the 7% who burned mainly on the weekends and the 4% who burned less than once a month). A combined total of 19% burned at least once a week, although only 3% of these recalled burning most nights.

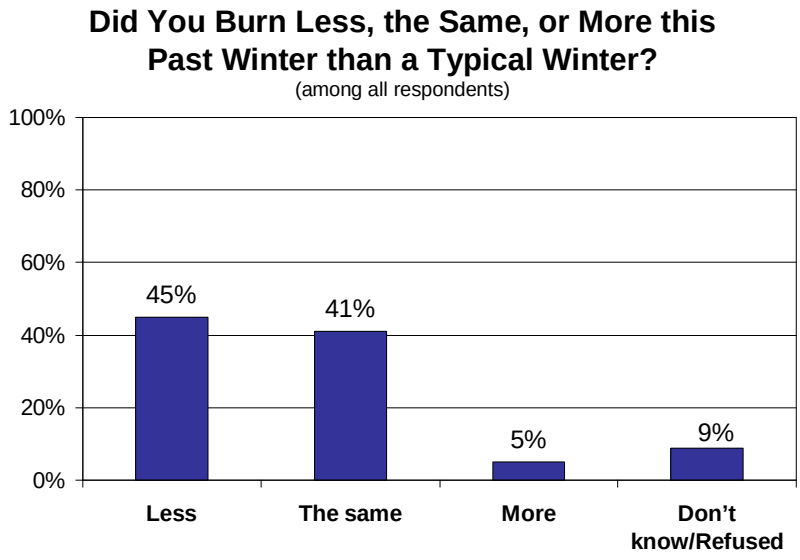
FIGURE 10 – FREQUENCY OF USE: HOW OFTEN DID YOU BURN WOOD, PELLETS OR MANUFACTURED LOGS LAST WINTER?



❖ ***14 Forty-five percent (45%) said they burned less last winter compared with a typical winter. The most common reason (21%) given for this change in behavior was the No Burn days. Combined with the 12% who were motivated to reduce their wood burning behavior because of air quality reasons, and the 2% who cited health related reasons, a total of 35% chose to burn less last winter in order to help decrease wintertime air pollution.***

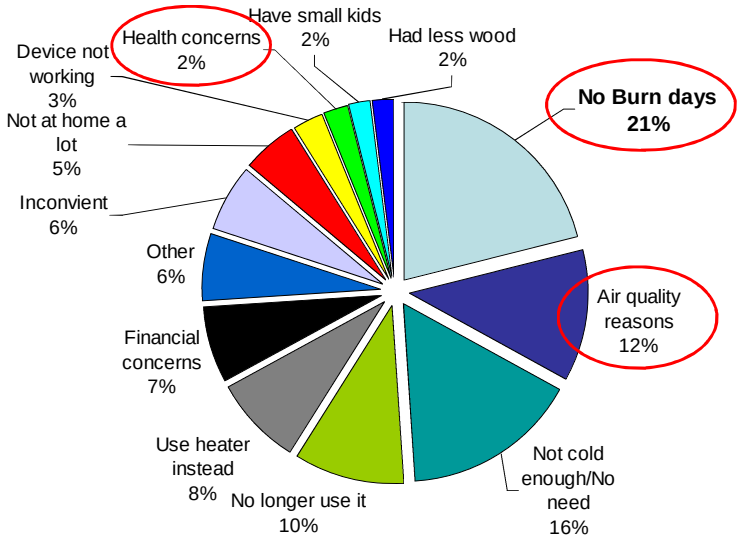
In order to better understand the wood burning frequency results, we asked all respondents to compare this year's level of wood burning activity with that of a typical winter. In other words, did they burn wood, pellets, and manufactured logs less, the same, or more from November 2008 to February 2009 than during a typical winter? As shown in the following chart, 45% of all respondents claimed to have reduced their burning activity last winter compared with a typical year. A similar percentage (41%) said they burned just as much as they have in the past. Only 5% said there had been an increase in amount of their wood burning last winter, and 9% were undecided.

FIGURE 11 – FREQUENCY OF USE COMPARED WITH PREVIOUS WINTERS



Those who burned less were asked to briefly explain why. When the open-ended responses were categorized, we found that 21% specifically mentioned No Burn days, 12% said they burned less for air quality reasons, and 2% mentioned health concerns. Ten percent said they no longer use their device, while 7% found wood burning to be too expensive now.

FIGURE 12 – REASONS FOR BURNING LESS THIS WINTER THAN A TYPICAL YEAR



Some of the categorized verbatim comments for the most common reasons for burning less wood included:

No Burn messages

- *"Because of the burn regulations.*
- *Because of the air quality control messages of non-burn days and we try to follow that.*
- *Because of the rules we now check before we burn.*
- *For the contamination and also that we have to call before burning.*
- *Stupid laws because we burn wood to heat home.*
- *The Air Alerts and there were a lot of days I couldn't burn.*
- *The new laws in effect.*
- *They put quite a few restrictions on burning, so we're trying to do something else.*
- *We burned less to do to the wood burning laws in effect.*
- *We were watching for which days were okay to burn.*
- *You have to look before you burn. I just don't have the time."*

Poor air quality

- *"Air pollution.*
- *Because I don't want to put the pollution in the air. I only burn when it rains.*
- *Due to the contamination to the world environment.*
- *I'm aware of the carbon footprints burning wood leaves behind.*
- *I realized it was bad for the environment and haven't burned since.*
- *Just because we were concerned about air quality.*
- *Pollution concerns.*
- *The environment. All the other pollution. Fires in your home are nice but the smoke is going in the air."*

No need/Not as cold this winter

- *"I don't think the winter was a harsh this year.*
- *Global warming, It wasn't that cold this last winter.*
- *I personally think it was a warmer winter and was gone a lot for work functions.*
- *It seemed like it was less cold.*
- *It started to get warmer earlier here.*
- *It was a warm winter with no rain.*
- *It wasn't as cold.*
- *The mild winter."*

Financial reasons

- *"Because I couldn't afford it.*
- *Because I have to pay for it. The Dura-Flame logs are a rare treat for me because of the expense.*
- *Can't afford it.*
- *I did not have the money to buy the wood.*
- *The cost of the wood and the fire burning logs, we were cutting back on money, because it doesn't really heat our house.*
- *The cost of wood went up.*
- *The economy, buying the wood."*

Increased heater use

- *"Because I use my heater more.*
- *My husband died and I don't have anybody to bring in the wood and set the fire. I don't need the fire going because I have the heating.*
- *I use my heater. Time consuming.*
- *I use the heater much more than the fireplace because you have to gather the wood. I don't have time even it's cheaper.*
- *We were using central air."*

Health-related reasons

- *"Because my wife is allergic to the smell and to the smoke.*
- *Sometimes the smell causes headaches.*
- *I have a lung problem."*

❖ ***15 The 5% who burned more wood, pellets and manufactured logs this winter than in the past did so because they felt it was cheaper than using the heater, they had wood, and they felt that this winter was colder than normal.***

Twenty respondents (or 5% of all respondents surveyed) said they burned more wood this winter than a typical winter. Two respondents were undecided as to why. Reasons given for increasing wood burning activity included:[7]

- the lower cost than the heater (5 respondents);
- the availability of wood this year (4);
- the lower temperature (3); and
- other reasons (6).

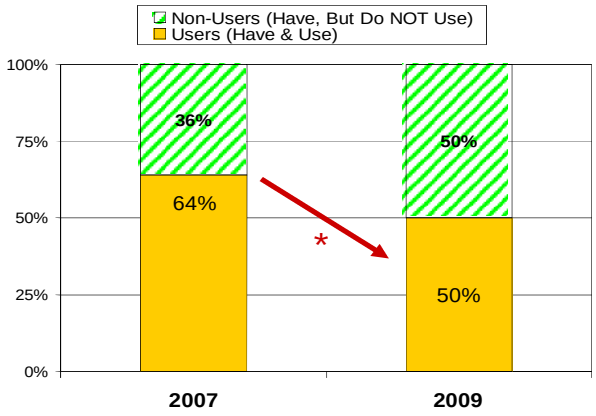
COMPARISON WITH PREVIOUS RESULTS

❖ ***16 Overall wood burning activity has dropped since 2007, with significantly fewer wood burning device owners lighting up at least once during the wintertime (50%) than in the previous survey (64%).***

The 2007 results indicated that the majority (64%) of wood-burning device owners burned wood last winter at least once during the winter months, which is significantly higher than the 50% found in the 2009 survey.

[7] These results should be treated with caution as there are so few respondents, which is why the results are not presented in percentages but actual number of respondents.

FIGURE 13 – USAGE AMONG DEVICE OWNERS
(by survey year)

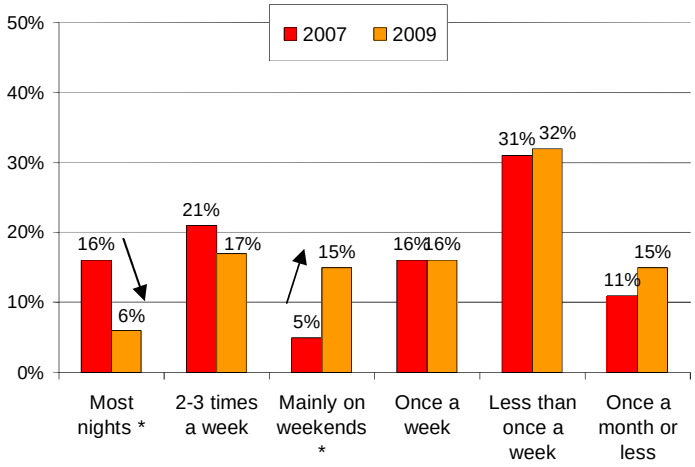


(* indicates a statistically significant difference)

- ***17 Further analyses indicated that fewer burners in 2009 than in 2007 were lighting a fire on "most nights" and more are burning wood "mainly on weekends." The total proportion of users who burned at least once a week dropped slightly from 58% in 2007 to 54%, although the difference was not found to be statistically significant.***

  In terms of wood burning frequency, the results of year-to-year comparison analyses indicated that significantly fewer respondents who used their wood burning devices were lighting a fire "most nights" (6%) in 2009 than in 2007 (16%) and significantly more were burning "mainly on the weekends" (from 5% in 2007 to 15% in 2009). However, in terms of weekly behavior, there was no significant difference found between the total percent of device-owning respondents who said they burned at least once a week this winter (54%) and those who gave a similar response in the 2007 survey (58%).

FIGURE 14 – FREQUENCY OF WOOD BURNING ACTIVITY
(AMONG WOOD BURNING USERS EXCLUDING UNDECIDED RESPONSES)
(BY SURVEY YEAR)



(* indicates a statistically significant difference)

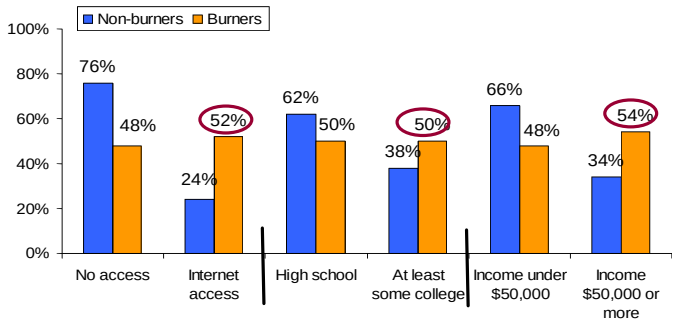
GROUP DIFFERENCES

❖ ***18 There were only three demographic characteristics that distinguished burners from non-burners: more burners than non burners had <u>access to the Internet</u>, some <u>post secondary education</u>, and lived in <u>wealthier</u> households.***

In order to try and characterize "burner" households in Sacramento County from those that did not burn <u>any</u> wood, pellets or manufactured logs last winter, a series of chi-square analyses were conducted, including all demographic features. Results indicated that those who were categorized as "burners" were significantly more likely to have:

- Access to the Internet (52% vs. no access, 24%),
- Had some post-secondary education (50% vs. not, 38%), and
- Household earnings of at least $50,000 (54% vs. lower, 34%).

FIGURE 15 – DISTINCTIVE DEMOGRAPHIC CHARACTERISTICS OF "BURNERS" VS. NON-BURNERS
(2009 SURVEY RESULTS)



Additional analyses compared the responses of "burners" and "non-burners" in terms of why they burned less this winter compared with a typical year. Results indicated that "burners" were significantly more likely than non-burners to say that it wasn't cold enough (17% vs. 3%).

Awareness of the Check Before You Burn Program

Unaided Awareness: Aware of No Burn Notices

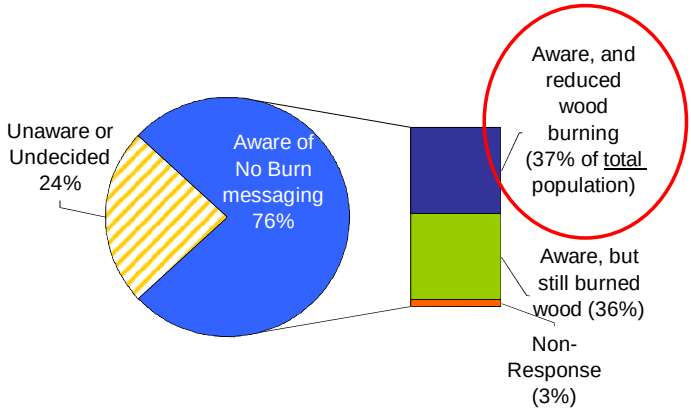
CURRENT RESULTS

❖ ***19 The outreach messages have been successful in reaching the population: three in four (76%) respondents recalled the No Burn day messages that notified them not to burn wood.***

When respondents were asked if they had heard, read, or seen any news stories, radio commercials, or e-mails informing them not to use their wood burning fireplaces or outdoor fire pits because of poor air quality last winter, the majority recalled some form of exposure (76%). One in five respondents (21%) said they did not recall hearing or seeing a No Burn message and 3% were undecided for a total of 24% who were unaware.

Those who were aware of the No Burn messages were asked if they decided not to burn wood because of them. About half said they had not reduced their burning (48%) or were undecided (3%). The other half (49%) reduced the number of fires they burned last winter because of the notices they heard or saw. This translates into **37% of all respondents that reduced wood burning because of the publicity**, as shown in the next graph.

FIGURE 16 – AWARENESS OF MESSAGES AND CHANGE IN BEHAVIOR
(AMONG ALL RESPONDENTS)



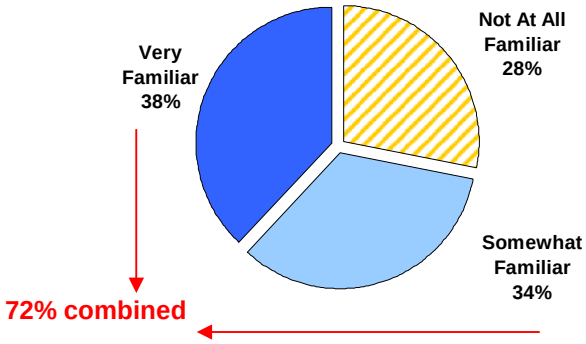
Unaided Awareness: Familiarity with the Check Before You Burn Program

CURRENT RESULTS

- ***20 Name recognition of Check Before You Burn is also high, with 72% claiming to be familiar with the Check Before You Burn program. However, not everyone was able to accurately describe it.***

  All respondents were asked about their familiarity with the Check Before You Burn program, using a three-point scale. This question was designed to evaluate respondents' unaided awareness of the program name. Results, as shown in Figure 16, are fairly evenly split among the three responses: 38% said they were very familiar with the program and 34% said they were "somewhat" familiar with it for a total of 72% who claimed to be familiar. The remaining 28% admitted to being not at all familiar with the Check Before You Burn program.

FIGURE 17 – UNAIDED AWARENESS: FAMILIARITY WITH THE CHECK BEFORE YOU BURN PROGRAM
(EXCLUDING UNDECIDED RESPONSES)



Verification of what was actually known about the program was determined by asking those who said they were "somewhat" or "very" familiar with the Check Before You Burn program to briefly describe it. Responses were recorded and then categorized and coded. Overall the vast majority accurately described aspects of the program, but a few responses indicated some misperceptions. Complete transcripts of all descriptions will be available in the statistical report.

41% mentioned the need to check to see if wood burning is permitted on a particular day. A sample of some of the verbatim responses includes:

- *"Basically, you check in the newspaper to see if you can burn or not. There are two conditions to check. There are voluntary restrictions and then there are days you can not burn at all unless it is your only heat source.*
- *Check the paper or web site if it's a burn day or not.*
- *Everyday we check the paper to see if it is burn or no burn day.*
- *I call before I burn.*
- *I know that you can look in the paper or online to see if burning is allowed those days.*
- *I know there is an alert system on the news that tells you when not to burn.*
- *I have the number in my cell phone and I would call before I burn.*
- *On a particular day somebody decides whether or not we can have a fire due to the quality of air and we have to call a number to find out if we can have a fire that night, or we can check online too.*
- *That we have to call to see if we can use our chimenea.*
- *We are supposed to check everyday before we do any burning that's allowed by the county to help the air quality.*
- *We usually check online and I think there is also a number you can call and they tell you if it is a non-burn day. We watch a morning news show and it mentions it too. Our neighbors often talk about it.*
- *You can be fined if you're burning on a day you're not supposed to burn, and you can check online to find out.*

23% mentioned the no burn days in general. A sample of these verbatim responses includes:

- *"Days that recommended not to burn.*
- *Depending upon the air quality that day is the condition whether we can burn wood on that day or not. I would assume somebody makes that decision whether we can burn a fire or not. I get that information in the paper daily.*
- *If it is limited or restricted to burn. Or no burning what so ever.*
- *On certain burn you can burn and some days you can't.*
- *Some days you can burn and some you can't. And some days it is just discouraged.*
- *That there were days that we should not burn and days that we are allowed to burn. I tried to abide by them but there were days when it was very cold and it was more economical to burn than to use other heating sources.*
- *There's a day that you can burn and if air quality is bad you can't burn. There's an index or something.*
- *There are no burn days."*

17% indicated that the program told them when to burn and not to burn. They mentioned the messages they see on the news or read in the newspaper, although didn't specifically say they had to check before they burned wood.

- *"We were notified that there are certain days that we can burn, and they notify us if air quality is poor.*
- *Control the smog in the area. On the news it tells you if you can burn on that day.*
- *I know that the news on certain channels they will give you an update on the status.*
- *On the news, they tell when to burn and not to burn.*
- *That they notify when you're supposed to burn and not to burn.*
- *That there is a warning that's issued in newspapers, TV, and radio.*
- *They announce on the TV what days to burn or not to burn wood.*
- *They check the day before to put up a sign or notice for the next day to let people know about when it's okay to burn.*
- *They forecast what they think the air quality is going to be for that day and then tell us whether we can burn or not. They give us a scale. I don't feel they are honest about it.*
- *They have notices on the nightly news on TV telling you whether or not it's okay to burn.*
- *They just tell us day to day whether we can burn or not.*
- *They just tell you what certain days are high danger for that day, so they tell you not to burn.*
- *They put it in the Bee that you shouldn't burn on a particular day because of the air quality.*
- *They put it in the paper everyday with the weather forecast, if you can burn or not.*
- *They tell you on T.V. not to burn.*
- *Well I just know that they advertise it on the news and when they do, I don't burn fires. I don't check online or anything."*

However, 3% may feel that the program is optional and voluntary. A sample of these comments includes:

- *"Days that recommended not to burn.*
- *I heard that there are some burn days that they suggest you don't burn because of air quality. I believe it showed in the paper those days.*
- *It is an optional program with notices in the local newspapers regarding whether or not fire burning is recommended on a particular day. It would be helpful if they put the info about it in the same place in the newspaper (The Sacramento Bee).*
- *The Sacramento Bee and the TV Stations & NPR mention when there is a no burn day. Right now the program is voluntary and they are probably not going to be able to enforce it and there is a waiver if you are poor.*
- *I know the program is out there, and they are trying to restrict burning because it causes particulates in the air.*
- *The city encourages non-burning and certain days of the week and an incentive for converting to a better solution to eliminate the harmful stuff.*
- *It provides educational information about knowing the air quality before you burn."*

A few (2%) had misconceptions about the focus of the No Burn program. A sample of those comments includes:

- *"It is about burning of substances and what it produces.*
- *Make sure to keep the chimney clean and check the shaft and make sure it is open.*
- *You are supposed to have your flue checked, not sure of the frequency. Make sure the flue is open.*
- *You can burn leaves and garden waste and you are supposed to check to see if it is okay to burn.*
- *You have to get a permit for outside fires for burning leaves, trash. Anything you burn has to be in a container."*

6% said they were familiar with the program, but when asked to describe it, they simply gave (mostly negative) commentary. A sample of these comments includes:

- *"That they are nosy and it is none of their damn business.*
- *I just know that there are times when the air pollution is really bad.*
- *I don't believe it means anything. I think it is a bunch of boohoo. There are not that people that burn uncontrollably, to a point that would matter to the air quality control.*
- *I just don't burn anymore, air quality doesn't allow us. It's just not fair.*
- *It is a pain in the rear end.*
- *It sucks. We have more cars blowing out more smoke than fireplaces burning for a couple of hours.*
- *The conditions that need to prevail in order to be looked at to see what is going to build up in the air so as long as we have a breeze i don't worry about it.*
- *The risk of burning and not burning."*

Aided Awareness: Familiarity with the Check Before You Burn Program

CURRENT RESULTS

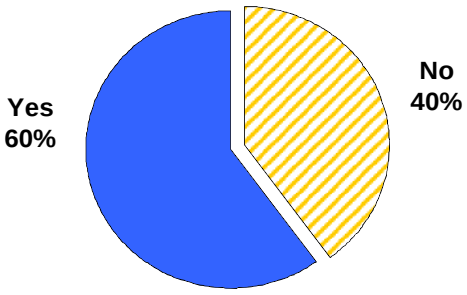
All respondents, regardless of their familiarity with the program were then read the following description:

You may or may not have heard that in Sacramento County, it is now law that from November to February residents and businesses are prohibited from using indoor or outdoor fireplaces, wood stoves, fire pits and chimeneas that burn wood, pellets, manufactured logs or any other solid fuel on days when air quality is forecast to be unhealthy to breathe. It is your responsibility to Check Before You Burn, to see if it is permissible to light a fire.

- ***21 Among respondents who previously were not at all familiar with Check Before You Burn, the majority said it sounded familiar to them after being read a description.***

  The 28% of respondents who were previously unfamiliar with the program were asked if it sounded it familiar after hearing the brief description. Six in ten (60%) said it did.

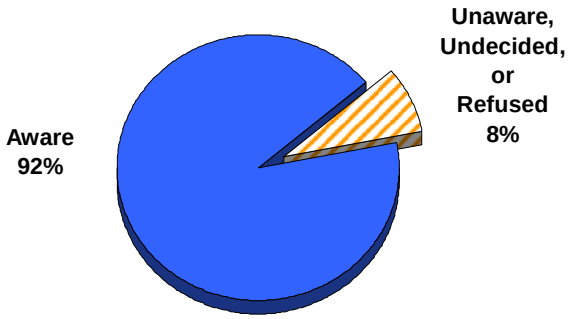
FIGURE 18 – AIDED AWARENESS: FAMILIARITY WITH PROGRAM AFTER HEARING A DESCRIPTION
(AMONG THOSE NOT FAMILIAR IN THE UNAIDED QUESTION)



- ***22 The program has already achieved successful visibility: when results of the unaided and aided awareness questions were combined, overall, 92% of all respondents were aware of the Check Before You Burn program.***

  Overall awareness of the program was measured through a combination of responses. To be considered "aware", a respondent: remembered seeing or hearing notices not to burn; or said they were somewhat or very familiar with the Check Before You Burn program (unaided awareness); or said that the program sounded familiar to them after hearing a description of it (aided awareness). Combining the results of these unaided and aided awareness questions indicated that the vast majority of all 400 respondents (370 respondents, or 92%) were aware of the program. Only 8% were still unfamiliar (or undecided or refused to answer) with the Check Before You Burn program, as shown in the next chart.

FIGURE 19 – OVERALL AWARENESS: UNAIDED + AIDED AWARENESS
(AMONG ALL 400 SURVEY RESPONDENTS)



Awareness of Different Levels of the Program

CURRENT RESULTS

❖ ***23 Approximately seven in ten respondents (74%) who were aware of Check Before You Burn were also aware of the Burn Cleanly, Burning Discouraged and Stage 2- All Burning Prohibited levels. However, recognition of the Stage 1- No Burn Unless Exempt level was much lower, at just over half (54%) of these respondents. Although it could be attributed to less exposure to that level (there were fewer actual Stage 1 days), program organizers might want to consider increasing efforts aimed at educating the public specifically about Stage 1 requirements. Alternatively, they might also consider eliminating the Stage 1 category altogether in order to reduce confusion.***

The 370 respondents who were aware of the Check Before You Burn program (either in the aided or unaided questions) were asked more specifically about their awareness of each of the four levels in the program, using the scale: not at all, somewhat, or very aware. The four levels of the Check Before You Burn program include:

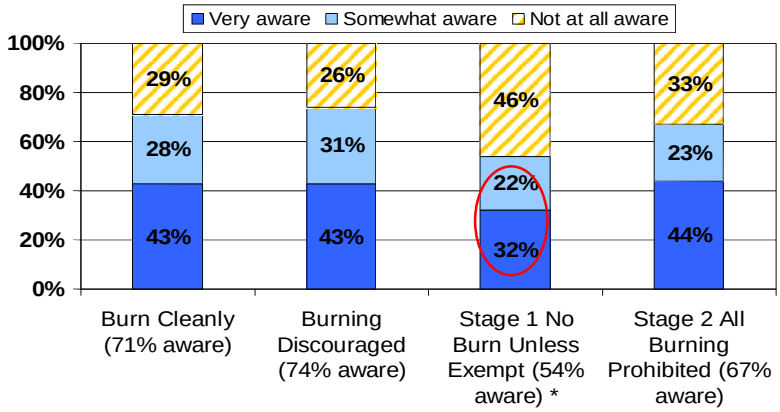
- **Burn Cleanly**. The public is allowed to burn and the burning of manufactured fire logs is acceptable at this level.
- **Burning Discouraged.** This is when residents are requested to voluntarily not burn.
- **Stage 1 – No Burn Unless Exempt**. At this level, burning is prohibited unless EPA-certified wood burning or pellet devices are used. First time violations will result in a $50 fine or a requirement to take a compliance course. Fines for subsequent violations will be higher.

- **Stage 2 – All Burning Prohibited.** At this level the burning of any solid fuel, including wood, manufactured logs and pellets, is prohibited with the same penalties as in Stage 1.

Results of respondents' awareness of each of the four levels are shown in the next chart. It can be seen, first of all, that the voluntary restriction (Burning Discouraged) is the most widely recognized level – 74% of the respondents who were aware of Check Before You Burn were also aware of the Burning Discouraged level (combined responses of "somewhat" and "very" aware). This was followed closely by awareness of the Burn Cleanly level (71%), and Stage 2 – All Burning Prohibited level (67%). However, it can also be seen that **awareness of Stage 1 – No Burn Unless Exempt is significantly lower than the other three levels** – only 54% of these respondents were aware of this level. It is recommended that further efforts be made to educate the population about this particular level. **Alternatively, they might also consider eliminating the Stage 1 category altogether in order to reduce confusion.**

It should be noted that this lower level of awareness of Stage 1 No Burn days may be due to the decreased exposure to this particular level. There were fewer Stage 1 No Burn days in the 2008-09 season than Stage 2 and Burning Discouraged: only 10 days compared with 28 Stage 2 No Burn days and 28 Burning Discouraged days.

FIGURE 20 – AWARENESS OF SPECIFIC PROGRAM LEVELS
(AMONG THOSE AWARE OF CHECK BEFORE YOU BURN; EXCLUDING UNDECIDED RESPONSES)



* indicates a statistically significant difference from the other three levels

GROUP DIFFERENCES

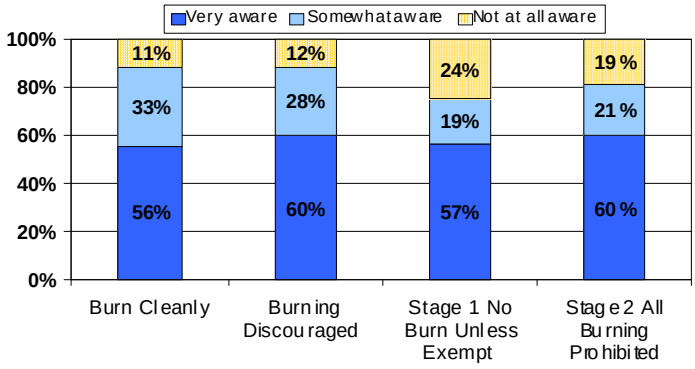
❖ ***24 There were very few demographic features that distinguished those aware of each of the levels from those not aware, indicating that the program can continue to be aimed at the general population rather than targeting specific groups of individuals.***

Results were dichotomized (responses of "somewhat" aware were combined with "very" aware vs. "not at all" aware) and 36 chi-square analyses (4 levels x 9 demographic variables) were run to see if there were any demographic features that distinguished those who were aware of each level from those who were not. Results indicated that in general, awareness of the four levels of the program did not vary by demographics – males were just as aware (and unaware) as females, better educated respondents were just as aware as less educated, households with high incomes were just as aware as those with lower incomes, those living with alone were just as aware as those living with other people, etc. The few differences that did emerge indicated that:

- owners were significantly more aware of all four levels than were those who rented,
- those older than 35 years were significantly more aware of the Burn Cleanly and Burning Discouraged levels than were those younger than 35 (73% vs. 50%; and 77% vs. 47% respectively),
- those who had Internet access were significantly more aware of the Stage 2 – All Burning Prohibited level than those who did not have access (70% vs. 46%), and
- Caucasians were significantly more aware of the Burn Cleanly level than non-Caucasians (75% vs. 59%).

Additional analyses were conducted among the small group of respondents who reported having an EPA-certified wood burning device to see if awareness of each program level varied. In general, awareness among those with EPA-certified devices was similar across the four program levels. Any differences shown in the chart below were not found to be statistically significant, which may be attributed to the small size of this subgroup: only 45 respondents.

FIGURE 21 – AWARENESS OF SPECIFIC PROGRAM LEVELS
(AMONG THOSE WITH AN EPA-CERTIFIED DEVICE; EXCLUDING UNDECIDED RESPONSES)



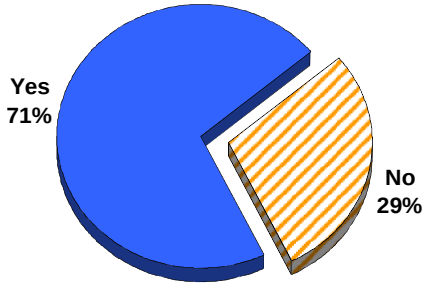
Knowledge about Different Aspects of the Program

CURRENT RESULTS

- ***25 The majority of respondents (71%) recognize that it is their responsibility to see if it is permissible to burn wood.***

  All 400 respondents were asked: "Before today, did you know that it was your obligation to check to see if you were permitted to burn wood on any given day or night during the winter?" Seventy-one percent said they did, while the remaining 29% were unaware of this fact.

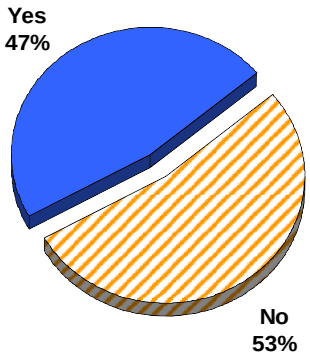
FIGURE 22 – AWARENESS OF PERSONAL OBLIGATION TO CHECK BEFORE BURNING
(AMONG ALL 400 SURVEY RESPONDENTS)



- ***26 Nearly half (47%) of the respondents who were aware of the Stage 1 and Stage 2 levels knew that it was illegal to burn manufactured logs on Stage 1 and Stage 2 No Burn days.***

  Respondents who were aware of the Stage 1 and Stage 2 levels were asked if they knew that it was illegal to burn manufactured logs on Stage 1 and Stage 2 No Burn days. More than half (53%) were unaware of this fact, while the remaining 47% said they knew this information.

FIGURE 23 – AWARENESS OF RULE AGAINST BURNING MANUFACTURED LOGS ON STAGE 1 AND STAGE 2 NO BURN DAYS
(AMONG THOSE WHO WERE AWARE OF THE STAGE 1 AND STAGE 2 LEVELS)



GROUP DIFFERENCES

- ***27 Demographically speaking, there was really no difference between those who were aware of the program details from those who were not.***

  There were no demographic characteristics that distinguished those who knew it was their responsibility to check before they burned from those who did not. Similarly, no statistically significant differences were found in the demographic responses between those who knew it was illegal to burn manufactured logs on Stage 1 and Stage 2 No Burn days and those who did not.

Compliance with the Check Before You Burn Program

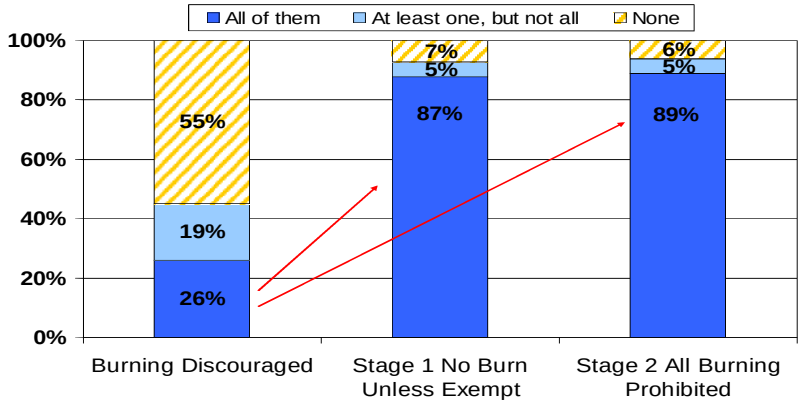
Among Those Aware at Each Level

CURRENT RESULTS

- ***28 Compulsory measures appear to be more effective than voluntary requests: among those who were aware of each level, compliance with all Stage 1 and Stage 2 No Burn days was significantly higher (at nearly 90%) than voluntary compliance when burning was simply discouraged (only 26%).***

  Those who were aware of each of the levels higher than the Burn Cleanly level were asked how frequently they complied with the notices during the past winter. It can be seen in the following chart that respondents were more willing to comply with the law (illegal to burn) than with a request (burning discouraged), with 87% saying they complied with all Stage 1 No Burn days and a similar (89%) percent indicating compliance with Stage 2 No Burn days, compared with only 26% who said they chose not to burn each time burning was discouraged. Conversely, the percentage of respondents who said they did not comply with any burn days was highest when burning was discouraged (55% of respondents) than when it was compulsory – only 7% defied the Stage 1 No Burn days and 6% defied the Stage 2 No Burn days.

FIGURE 24 – COMPLIANCE WITH THE CHECK BEFORE YOU BURN PROGRAM BY SPECIFIC LEVEL
(AMONG THOSE AWARE OF EACH LEVEL; EXCLUDING UNDECIDED RESPONSES)



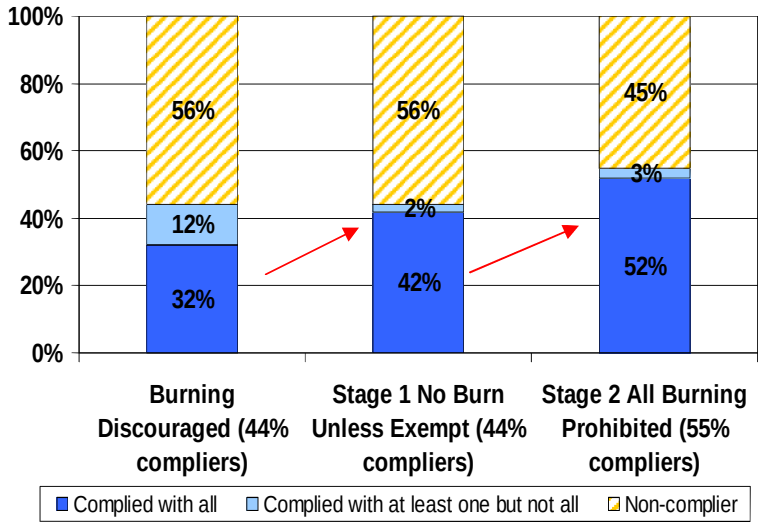
Among the Total Respondent Base

CURRENT RESULTS

❖ ***29 In terms of the total base of respondents (all of whom owned wood burning devices), 32% complied with every voluntary Burning Discouraged request, 42% complied with every Stage 1-No Burn Unless Exempt directive; and 52% complied with all Stage 2-All Burning Prohibited days. In other words, compliance increased as the level of restrictions increased.***

In order to generalize to the entire base of respondents, compliance within each level was re-calculated: those who said they either complied with all burn days or at least one of them were coded as "compliers"; all other respondents (those who did not comply, those who were undecided, those who were unaware of each level and those who refused to answer) were combined and coded as "non compliers." When based on the total population of respondents, it can be seen in the next chart that of the total base of respondents, all of whom owned wood-burning devices, 52% complied with all Stage 2 No Burn days this past winter and a further 3% complied with at least one of them, indicating that over half of the population complied with the mandatory Burning Prohibited level of the Check Before You Burn program. It can also be seen that compliance with all notices increased as the restrictions increased. In other words, significantly fewer respondents refrained from burning on all voluntary Burning Discouraged days (32%) than with all Stage 1 No Burn days (42%); and in turn, significantly more respondents complied with all Stage 2 No Burn days (52%).

FIGURE 25– COMPLIANCE WITHIN THE TOTAL GROUP OF RESPONDENTS
(INCLUDES ALL 400 RESPONDENTS)



GROUP DIFFERENCES

❖ ***30 Compliance was relatively independent of demographics -- there were only three features that distinguished compliers from others within each level of the program: home owners, those older than 35 years, and those whose ethnicity was Caucasian were more likely to comply.***

Respondents who complied all the time were combined with those who complied at least once within each of the three program levels and analyses comparing compliers versus all other respondents were run to determine if there were any distinguishing demographic features. In total, 27 analyses were run (3 levels x 9 demographic variables).

Results indicated that, in general, those who were aware of and complied with each of the three Check Before You Burn levels had the same demographics as those who did not comply – both males and females complied or did not with Burning Discouraged, or Stage 1 or Stage 2; less well educated respondents were just as likely (or not) to comply as those better educated, households with low incomes were just as likely to comply within each level as those with higher incomes, those living with alone were just as likely to comply as those living with other people, etc. The few differences that did emerge indicated that more compliers within each of the three levels:

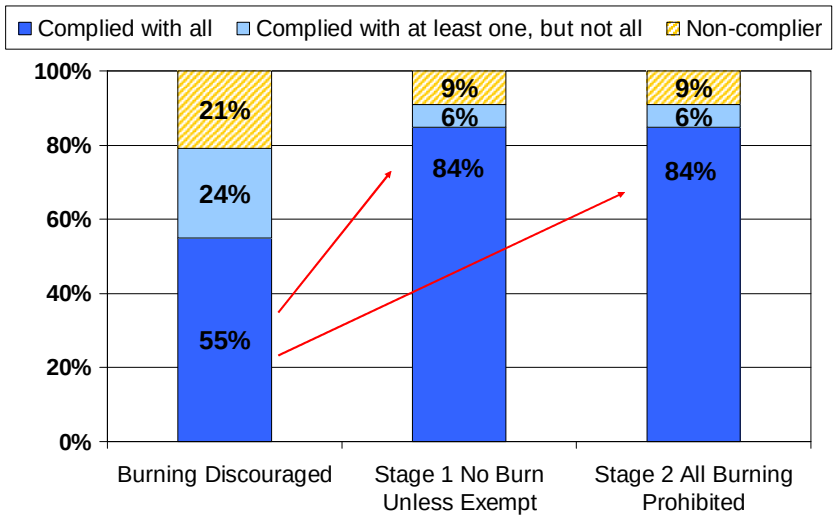
- owned their homes than rented them:
  - Burning Discouraged - (47% owners vs. 31% renters),
  - Stage 1 – (47% vs. 28%), and
  - Stage 2 – (59% vs. 42%),

- were over 35 years of age than under 35 years of age:
  - Burning Discouraged - (47%% older vs. 21% younger),
  - Stage 1 – (46% vs. 21%), and
  - Stage 2 – (58% vs. 30%),
- were Caucasian than non-Caucasian
  - Burning Discouraged - (49% Caucasian vs. 30% non-Caucasian), and
  - Stage 2 – (61% vs. 41%).

❖ ***31 Among EPA-certified device owners, compliance with Stage 1 No Burn days was just as high as it was for Stage 2 days, even though they were exempt and legally allowed to burn on Stage 1 No Burn days.***

Additional analyses were conducted among the small group (45 respondents) who reported having an EPA-certified wood burning device to see if their level of compliance varied by program level. It can be seen in the following chart that EPA-certified device owners were just as likely to comply with Stage 1 No Burn days when they were exempt as they were with Stage 2 days, indicating that there is **no advantage to keeping the Stage 1 No Burn Unless Exempt level in the program**[8]. They were also significantly more likely to comply with all Stage 1 and Stage 2 No Burn days (both 84%) as they were with Burning Discouraged days (55%).

FIGURE 26 – COMPLIANCE WITH SPECIFIC PROGRAM LEVELS
(AMONG THOSE WITH AN EPA-CERTIFIED DEVICE; EXCLUDING UNDECIDED RESPONSES)



[8] Given that there is already some confusion about Stage 1 qualifiers, this analysis offers additional support for possibly eliminating the Stage 1 level from the Check Before You Burn program.

Communication Channels

Among Those Aware of the Check Before You Burn Levels

CURRENT RESULTS

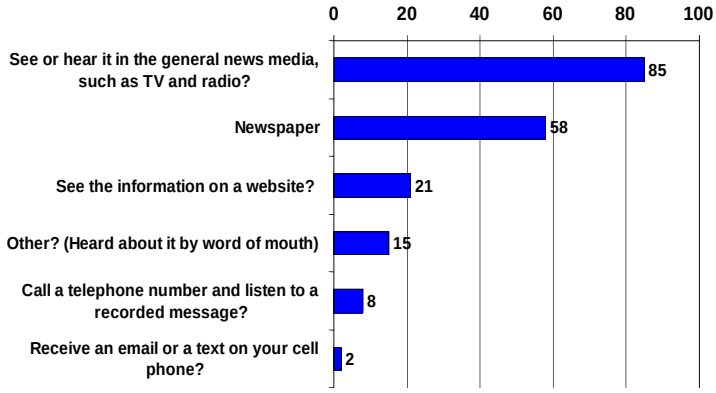
❖ ***32 Using news media to announce No Burn days is an effective communication channel: the vast majority of respondents aware of the program heard about the No Burn days on television and radio (85%), followed by newspapers (58%).***

Respondents who were aware of any of the Check Before You Burn levels (i.e. those who said they were either "somewhat" or "very" aware of the Burn Cleanly, Burning Discouraged, Stage 1-No Burn Unless Exempt, or Stage 2-All Burning Prohibited levels) were asked how they heard about the No Burn days during the past winter. The exact wording of the question was:

> *I am going to read you a list of possible ways that residents could have found out about the air quality and whether or not they could burn wood on a particular day. I'd like you to tell me how you might have heard about the No Burn days during this past season. Did you …*

Results are presented in the next chart. It can be seen that the vast majority of these respondents (85%) heard about No Burn days via television and radio. Nearly six in ten (58%) read about the No Burn days in the newspaper, and approximately one fifth (21%) saw the information on a web site. Eight percent (8%) called a telephone number to hear a recorded message and only 2% of these respondents were Air Alert subscribers – that is, those who received either an e-mail or a text message from the District. **Further efforts could be made to increase the number of Air Alert subscribers and to better publicize the phone-in telephone number.** Of those who said they learned about the No Burn days some other way, the most frequently mentioned channel was via word of mouth, through friends, neighbors and colleagues.

FIGURE 27 – COMMUNICATION CHANNELS
(AMONG THOSE AWARE OF PROGRAM, EXCLUDING UNDECIDED RESPONSES)

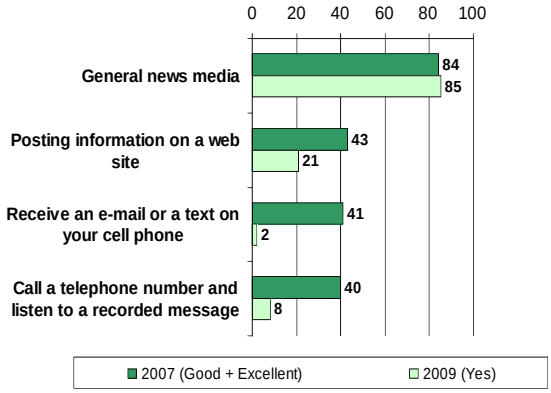


COMPARISON WITH PREVIOUS RESULTS

❖ ***33 The general news media was also the preferred communication channel identified in the 2007 baseline survey.***

In the 2007 baseline survey, respondents were read a list of possible ways that residents could find out about whether or not they could burn wood in the event that a mandatory no-burn rule was adopted, and were asked to rate each one in terms of how effective it would be for them personally, using a four-point scale: poor, fair, good, or excellent. Results indicated that 84% of respondents said they would prefer to hear about No Burn days (combined ratings of "good" plus "excellent") via the general news media of television, radio, and newspapers; the same percentage who actually did hear about the No Burn days through television and radio this year. However, the percentages of respondents who, in 2007, thought they would prefer to visit a web site (43%), receive an e-mail (41%), or call a telephone number (40%) were in all cases substantially higher than the percentage of respondents in 2009 who actually used these means to find out about No Burn days (21%, 2%, and 8% respectively).

FIGURE 28 – 2007 HYPOTHETICAL PREFERRED COMMUNICATION CHANNELS VS. 2009 ACTUAL USE



GROUP DIFFERENCES

❖ ***34 How respondents heard about whether or not they could burn wood was relatively independent of demographic features, indicating that the public education campaign can continue to be aimed at the population in general to be effective.***

Chi square analyses were run to determine if there were any demographic features that distinguished those who heard about the No Burn days via television and radio, via newspaper, or via the web site from those who did not.[9]

[9] The percentages who heard the messages via email or by calling a telephone number were too small to be analyzed by demographics.

Results indicated that in general, the communication channels respondents used to hear about whether they could burn wood were independent of demographic features – both males and females learned about the No Burn days via the general media, newspaper, or via the web site; less well educated respondents were just as likely to have used the three channels as those better educated, households with low incomes were just as likely to have used the channels as those with higher incomes, those living with alone were just as likely as those living with other people, etc. The few differences that did emerge indicated that:

- those who learned about the No Burn days from the newspaper were more likely to own their homes (61%) than to rent them (40%); and to be older than 45 years of age (62%) than younger than 45 years (42%), and
- those who accessed the web site were more likely to be younger than 45 years of age (34%) than those aged between 45 and 64 years (21%) or 65 years and older (8%).

Demographics

❖ ***35 A plurality of respondents who owned wood burning devices and lived in Sacramento County were: females who live with one to three other people in a home they own. They hold a college degree, have access to the Internet, are non-subscribers to Air Alert, are at least 45 years of age, self-identify as Caucasian, and have an annual household income of at least $50,000.***

Table 2 provides the reader with the respondent demographics from the interviews conducted with the sample of Sacramento county residents who had wood burning devices either inside or outside their homes.

Table 2

GENDER	PERCENT
Female	52%
Male	48%
Total	**100%**

SURVEY LANGUAGE	PERCENT
English	98%
Spanish	2%
Total	**100%**

AIR ALERT SUBSCRIPTION	PERCENT
No	94%
Yes	4%
Non-response	2%
Total	**100%**

ETHNIC BACKGROUND	PERCENT
African-American	5%
Asian/Pacific Islander	6%
Caucasian	70%
Hispanic/Latino	11%
Something else	3%
Non-response	*5%*
Total	**100%**

HOUSEHOLD SIZE	PERCENT
Live alone	15%
Two members	35%
Three members	18%
Four members	*20%*
Five or more members	*11%*
Non-response	*1%*
Total	**100%**

ACCESS TO THE INTERNET	PERCENT
Yes	89%
No	10%
Non-response	*1%*
Total	**100%**

HOME OWNERSHIP	PERCENT
Own	86%
Rent	16%
Non-response	*1%*
Total	**100%**

EDUCATION	PERCENT
High school or less	17%
Some college	24%
Trade/vocational school	4%
College degree	37%
Post-graduate degree	16%
Non-response	2%
Total	**100%**

AGE	PERCENT
18-24	3%
25-34	8%
35-44	17%
45-54	26%
55-64	21%
65 and older	23%
Refused	*2%*
Total	**100%**

2008 ANNUAL HOUSEHOLD INCOME	PERCENT
Under $20,000	6%
$20,000 to $49,999	16%
$50,000 to $99,999	37%
$100,000 or more	27%
Non-response	*14%*
Total	**100%**