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EXECUTIVE SUMMARY

Introduction

Jeffrey Scott Agency (JSA), the agency for Fresno Metropolitan Flood Control District (FMFCD), commissioned AIS Market Research to conduct 400 phone interviews with Fresno/Clovis adult residents on their awareness of storm drains, water runoff, and their opinions of the contributors to water pollution, and their disposal practices of unused fertilizers, pesticides, old motor oil, paint, varnishes and paint thinner. The 2013 phone surveys were conducted from mid-January to mid-February 2013. The results are compared to statistics (if available) from previous surveys as far back as 1994.

The sample size of 400 allowed us to collect data that has a confidence interval of 4.9% at a confidence level of 95%. One change in methodology for 2013 was the survey's sampling design. To ensure the sample statistics could be generalized to the population parameters, a stratified random sample design was chosen to better approximate the true population in terms of socioeconomic status, ethnicity, geography and language. Actual population parameters are based on the US Census Bureau's 2012 American Community Survey.

Although the sampling design was improved for this survey period, the use of a trend analysis is still a valuable approach. There were 339 of 400, or 84.75 percent, of the surveys conducted in English and closely resemble the composition of the past surveys. The sample sizes of 12.8 % (Spanish) and 2.5 % (Hmong) do give more insight into the subsets of the population of Spanish and Hmong speakers, and produce only a small change in most of the aggregated results. The overall results are significantly weighted because of the count of English language only respondents, and offer a strong approximation of past samples for comparison to past surveys.

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Findings, trend analyses, and marketing recommendations are summarized below:

Conclusions

Product Usage

Outside Pesticides. Use of chemicals used outside of the home was more prevalent among higher income groups and homeowners.

Interest in less-toxic pesticides has not increased since 2009, and 10% dispose of pesticides by putting them in the trash/landfill. Asians and Spanish-only speaking residents exhibited relatively high interest in such product options. They would like more information on less-toxic pesticides. The best two venues to disseminate such information as noted by the respondents would be the Internet and hardware stores such as Lowe's Hardware and Home Depot.

Fertilizers. Fertilizer use is also trending down from 62% (2005) to 55% (2009), to 46% (2013). Usage was observed to be higher among Spanish-only speaking residents, Caucasians, and households in the Northeast region of Fresno/Clovis. The latter group (households in the Northeast region of Fresno/Clovis) consists of a higher ratio of homeowners, which could result in a targeted campaign with messaging specific to both fertilizer and pesticide use (since homeowners are a key target for these messages).

Oil-based Paints/Water-based Paints/Paint Thinner. Use of oil-based paints/varnishes and water-based paints were also down. The lesser use could be due to the households not painting during the last few recession years; and not likely because consumers are opting for water-based paint instead of oil-based versions.

HHW Collection. The number of people taking household products to Household Hazardous Waste collection events and centers has increased in the current survey; pesticides: 15% (2013), 9% (2009), used motor oil: 22% (2013), 7% (2009), 0% (2005) and 0% (2001). Education on these events and centers should be continued to reinforce the importance and availability of such services.

Disposal Methods. As a follow up question for those respondents who indicated they used any of the six household products (Pesticides Inside the Home, Outside Pesticides, Fertilizers, Oil-based Paints/Varnishes, Water-based Paints, Paint Thinner) they were asked about how they disposed of each unused product. In each instance, participants' responses on how they disposed of unused household chemicals were predominantly, "use it all up, nothing left" and "store it for future use."

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Highlights of responses specific to each pollutant source include:

- » The disposal practices of unused pesticides in 2013 have remained unchanged from the 2009 patterns, with 23 respondents (10%) disposing of pesticides by putting it in the trash/landfill. Approximately 86% of Asian survey participants indicated that they used all the “unused” pesticides.
- » Renters appeared to be less aware of, or familiar with, hazardous waste collection centers, and more promotion of this facility could be done via large rental complexes.

Product Labels. Language barriers may present a challenge in reading pesticide product labels. Over 40% of Asians said they never read pesticide product labels. Spanish language responses were 25% less likely to have read a product label for instructions for the product’s use.

Information Sources. The Internet still remains the most popular response for where participants would seek out information about less-toxic alternatives at 41%. Additional information sources as noted by respondents include nurseries and hardware stores.

Used Motor Oil. There was a slight decline in the number of participants changed automobile oil at home in this survey: 40% (2013) and 48% (2009). The decline was possibly due to the slight improvement in our local economy. Most residents, as reflected in the 2013 Survey, are disposing of used motor oil in the correct manner, having participated in curbside oil recycling and taking their old/used motor oil to certified collection centers. Spanish speakers are nearly twice as likely to have changed their oil at home when compared to English speakers (65% Spanish speaking respondents reported having changed a car’s oil at home, compared to 35.7% for English speaking respondents).

As a result, it is important to inform Spanish-only speaking residents of these newer facilities/services, as this group is more likely to change motor oil at home.

Litter. The less affluent or less educated also tend to perceive littering as a major problem in the area that they live in. 34% of respondents believe litter is a “major problem” in the area in which they live. It is unclear whether households understand the link between littering and water pollution.

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Stormwater and the Storm Drain System. While the majority of respondents understand some of the more common sense effects of pollution (61% agree that rain water turns air pollution into water pollution and 83% agree that overwatering creates runoff that carries pesticides into the storm drain system), there is still confusion about how the storm drain system operates. Only 20% to 25% of the residents in the 2013 survey have the correct understanding of how storm drains work, and how water pollution could occur. 66% of respondents agree that storm drains go to a treatment plant to be processed and filtered to remove pollutants, which is incorrect and should be considered in future messaging. That number is slightly up from previous surveys: 66% (2013), 65% (2009), 55% (2005), 50% (1994).

How stormwater pollution affects our water supply and how rain become stormwater runoff and is transported to stormwater basins should be of top priority in future education.

Water Pollution. Water pollution is of concern to residents with 47% of survey respondents indicating that water pollution is “very serious”, and 41% indicating it was “somewhat serious”.

Water pollution was seen as most serious by the following groups: people with lower income, less educated and Spanish-only speaking residents. Their more educated, more affluent counterparts did not believe water pollution to be as serious of a problem. This finding is of concern, as the affluent tends to use more pesticides and fertilizers.

The more affluent tend to attribute water pollution to agricultural chemicals and activities while the less affluent viewed improper disposal of automobile fluids and vehicle fluid leaks as the main causes of water pollution. Campaigns to champion clean water protection could expose the appropriate segments to other major causes of water pollution that they are not aware of, and to reinforce their existing perceptions of current major contributors to water pollution.

District Recognition. The majority of respondents believe the “City of Fresno, City of Clovis, Government” is the local agency responsible for the operations and management of our storm drain system. Just over half (51%) of the survey population recalled the name Fresno Metropolitan Flood Control District. A large portion of Asians and Spanish-only speaking respondents were largely unaware of FMFCD.

Campaign Recognition. Advertising awareness/recognition remained very high in this present survey at 74% (2013), up from 71% (2009), 68% (2005) and 56% (2001). The question presented in the survey was: Have you heard or seen any advertisements including TV and radio commercials, bus or newspaper ads about stormwater runoff, stormwater basins, trash and litter, or used motor oil recycling. Recognition for the words “stormwater runoff, stormwater basins, trash and litter and used motor oil recycling is high, but as noted by the question above, the correlation between those things, how they function and how they relate to the District needs to be explored further to give the community the full understanding.

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Recommendations

The following recommendations are made as a result of this survey and are designed to help guide the annual strategic planning process over the next five years.

General Recommendations

Continue work with National Pollutant Discharge Elimination Permit (NPDES) partner Co-permittee agencies (Fresno Metropolitan Flood Control District, City of Clovis, City of Fresno, County of Fresno, and California State University, Fresno) on public education for proper disposal of HHW like used motor oil, fertilizer, pesticides, paint/varnish and paint thinner.

- » Explore the messaging and perception of less toxic pesticides as part of focused group discussions. We need to communicate that less toxic pesticides are not less effective at killing the targeted pest, but are in fact just better for the environment.
- » Build upon past success of public awareness campaigns with specific “call to action” messages that motivate residents to act because they feel personally responsible/emotionally connected to the issue or desired outcome.
- » Provide culturally appropriate and relevant messages and communications tools in both traditional and non-traditional media such as out of home, television, print, radio and online.
- » Continue public education to reinforce key messaging on how litter/improper disposal of HHW impacts stormwater pollution, or how litter leads to water pollution in less obvious ways.
- » Reassess general outreach communication messages (particularly the sock puppet campaign) for relevancy.
- » Continue to brand FMFCD and its services to the community.

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Specific Recommendations

- » Co-Permittee partnerships are proving to be successful in getting the message of proper disposal of HHW to the community. It is important to reinforce these messages to continue efforts, but it is not recommended that FMFCD focus extensive resources on these issues as public response and behavior to date is positive.
- » Consider more multi-lingual promotion of HHW collection centers via large complexes.
- » Continue and expand outreach in nurseries and hardware stores, especially for pesticides and fertilizers. Additional locations in relation to geographic areas found in the survey should be added. Each piece should be evaluated for cultural relevance. All general communication should be produced in English and Spanish, possibly Hmong, depending on the medium.
- » Inform Spanish-speaking residents of HHW collections centers and events, especially with regard to used motor oil.
- » Improve FMFCD's website by organizing the information in a more user-friendly manner.
- » Use geographical regions and language preferences uncovered in this survey to select communication vehicles in order to penetrate areas of greatest need. Depending on the campaign, a variety of communication vehicles will be explored including out of the home, direct mail, television, radio, print, web and event marketing.
- » Improve multi-lingual outreach by taking a close look at advertising/communication messages by overlaying demographic information derived from this survey (affluence, age, language, etc.).
- » Conduct multi-lingual focused group discussions to uncover residents' understanding of the storm drain system and motivation to change undesirable behavior.
- » Test understanding of "less toxic pesticides" as part of focus group discussions and develop a new campaign around findings.

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Fresno Metropolitan Flood Control District

Public Awareness Survey 2013

Research Objectives, Methodology, & Sample

In January 2013, Fresno Metropolitan Flood Control District (the District) worked with Jeffrey Scott Agency (JSA) to conduct 400 phone interviews with Fresno/Clovis adult residents on their awareness of storm drains, stormwater runoff, and their opinions of contributors to water pollution. Residents' disposal practices of unused fertilizers, pesticides, old motor oil, paint, varnishes, and paint thinner were also ascertained in the survey as part of a longitudinal survey where similar surveys would be conducted every three to four years. The 2013 phone surveys were conducted from mid-January to mid-February 2013. The targeted sample quotas and actual samples for each demographic group or sub-group are summarized in Table A.

The actual sample percentages matched the targeted quota percentages (within one to two respondents), except for a particular income category, renter versus homeowner proportions, and geographical representations. A major challenge with multiple strata sampling (i.e., age, ethnicity, homeownership, etc.) is striving to meet the targeted proportions in one stratum without disrupting the proportions achieved for another stratum. In the final sample, 4% of the total sample (N = 400) did not want to provide income information. The complete frequencies and percentage tabulations for each questionnaire item can be found in Appendix A of this report. The zip codes within each geographical region (e.g., Northeast, Southwest) are listed in Appendix B. Overall, the final sample sub-group representations have matched the target proportions well.

One change in methodology for the 2013 survey, was the survey's sampling design. To ensure the sample statistics could be generalized to the population parameters, a stratified random sample design was chosen to better approximate the true population in terms of socioeconomic status, ethnicity, geography and language. Actual population parameters are based on the US Census Bureau's 2012 American Community Survey.

Although the sampling design was improved for this survey period, the use of a trend analysis is still a valuable approach. There were 339 of 400 surveys conducted in English and closely resemble the composition of the past surveys. The sample sizes of 12.8% (Spanish) and 2.5% (Hmong) do give more insight into the subsets of the population of Spanish and Hmong speakers, and produce only a small change in most of the aggregated results. The overall results are significantly weighted because of the count of English language only respondents, and offer a strong approximation of past samples for comparison to past surveys.

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Table A: Demographic Sample Quota Versus Actual Sample

Demographic Group	Targeted Sample Quota		Actual Sample N = 400	Demographic Group	Targeted Sample Strata		Actual Sample N = 400
Males	50%	200	50%	White	35%	140	35%
Females	50%	200	50%	Hispanic	45%	180	45%
				African-American	5%	20	5%
18 to 34	37%	148	37%	Asian	8%	32	8%
35 to 44	17%	68	17%	Mixed & Other	7%	28	7%
45 to 54	17%	68	17%				
55 to 64	14%	56	14%	Rent	46%	184	55%
65 or older	15%	60	15%	Own	54%	216	44.5%
Less than \$25K	25%	100	25%	Northwest	28%	112	29%
\$25K to \$49,999	25%	100	25%	Northeast	29%	116	27%
\$50K to \$74,999	25%	100	21%	Southeast	32%	128	33%
\$75K or more	25%	100	25%	Southwest	11%	44	11%

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Major Findings

Q3A. Use Pesticides Inside Your Home

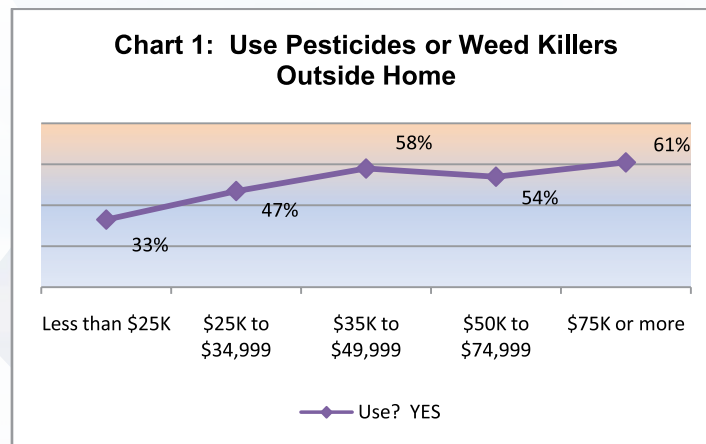
Slightly over a quarter (i.e., 27%) of the total sample (N = 400) do use pesticides inside their homes. In the previous 2009 Survey, the reported statistic for this question was 38%. The earlier two consecutive surveys' corresponding figures were 45% (in 2001) and 51% (in 2005). Over the past 12 years spanning four surveys, reported use of pesticides inside the home appears to be trending down.

In-home pesticide use was highest among African-American (40% of this ethnic group), and lowest among Asians (3%). The corresponding in-home usage among Latinos/Hispanics Caucasians/Whites was 29% and 28%, respectively. The Chi-Square test (a statistical test used to examine differences with categorical variables) of overall cell differences in a cross-tab table was applied to cross tabulations of pesticide usage (Yes/No) with Age groups, Income brackets, Rent vs. Own groups, Gender, Geographical Areas, and Educational Levels. Other than ethnicity, no group comparisons yielded a significant difference for in-home pesticide usage.

Q3B. Use Pesticides or Weed Killers Outside Your Home

Almost half the total sample (49% or 196 out of 400 respondents) did use pesticides and weed killers outside their homes. Usage in 2013 appears to be substantially lower than the 2005 Survey level (70%) and 2009 Survey's 64 % (see Appendix C for comparisons of levels with previous surveys). Interestingly, the number of users in 2013 survey (i.e., the 196) is higher than the 187 respondents (in the present 2013 survey) that do use fertilizers and/or pesticides on their own yard (see Q2's frequency and percentage breakdowns in Appendix A). The inclusion of "weed killer" in Q3B may have contributed to the higher number than the results in Q2.

Generally, higher incomes were associated with higher incidence of pesticide and/or weed killer usage (see Chart 1). Homeowners also indicated significantly higher usage than renters (56% versus 40%). Homeowners are more likely to have a yard, and opted to use pesticides and weed killers.



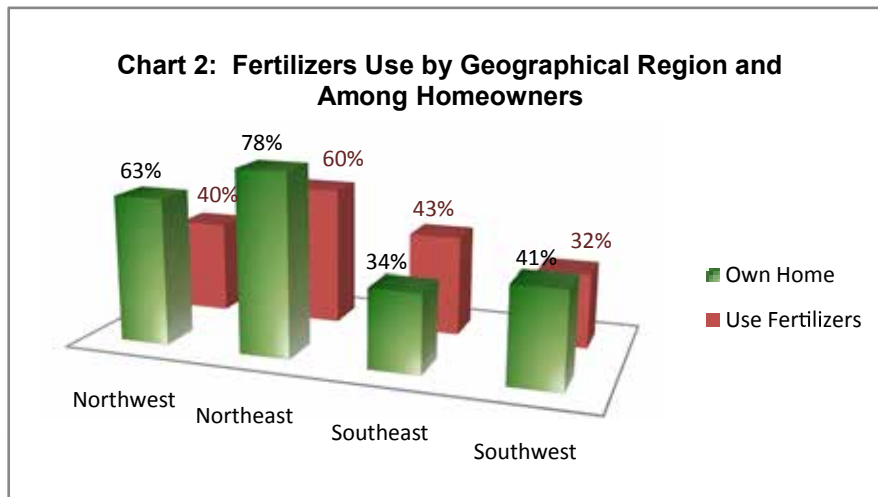
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Q3C. Fertilizers

Approximately 46% of residents surveyed do use fertilizers. This percent is also trending down from 62% (in 2005) and 55% in 2009 (see Appendix C for comparisons). As with pesticides or weed killers, fertilizer use was higher among homeowners than renters (56% versus 33%). Usage was also higher among respondents interviewed in Spanish than their counterparts interviewed in English (61% versus 45%).

Fertilizer use was significantly different across geographical regions. Residents in the Northeast region indicated the highest use (i.e., 60% said “Yes”) while Southwest region residents had the lowest use (32%). Usage may be associated with percentage of homeownership across the four regions (see Chart 2).

Generally, higher incomes were associated with higher incidence of fertilizers use. As for ethnicity comparisons, Caucasians had the highest use (54%) while Asians relatively the lowest (28%). Hispanics and African-Americans reported use at 42 to 40%.



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Q3D. Oil-based Paint/Varnishes

Use of oil-based paint and varnishes is also trending down from 22% (in 2005) and 19% (in 2009) to 15% in the present survey (2013). The 15% is at the level reported in the 2001 survey. However, the lowest level was in 1997, at 12% (see Appendix C).

Usage was different across geographical quadrants of Fresno/Clovis. Respondents interviewed in Spanish also indicated higher use of oil-based paint/varnishes than their counterparts interviewed in English (26% versus 14%). Use of this product differed widely across ethnic groups (see Table B).

Table B: Oil-based Paint/Varnish Use by Ethnic Group

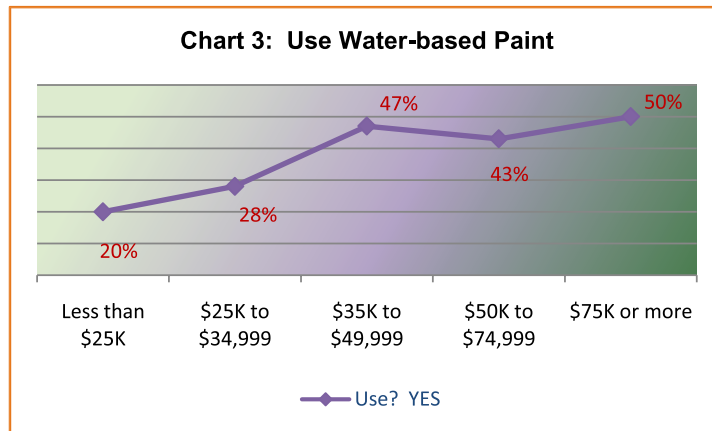
	Caucasians	Hispanics	African-Americans	Asians
Q3D. Yes, use oil-based paint/varnishes	11%	18%	45%	0%
<hr/>				
	Northwest	Northeast	Southeast	Southwest
	14%	11%	23%	2%

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Q3E. Water-based Paint

Water-based paint use has declined substantially from 2005 and 2009 levels (54% and 57%) to 36 % in the present 2013 Survey.

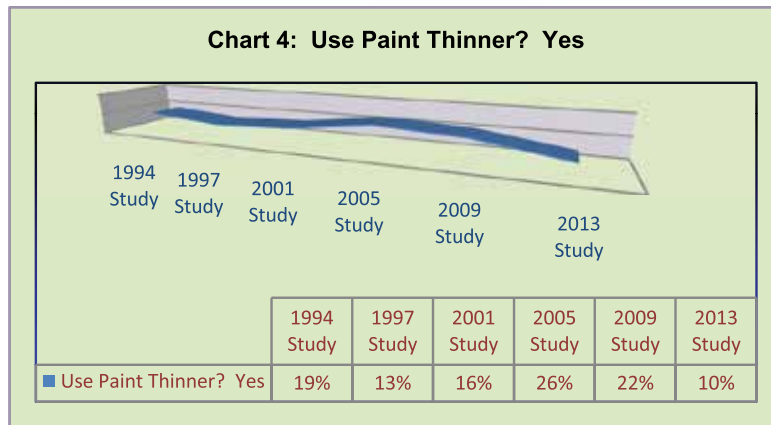
The 2013 results showed that 44% of homeowners (compared to 26% of renters) do use water-based paint. Usage was generally greater in higher income groups (see Chart 3). Usage was also significantly greater in males (41% versus 31% among females) and in the “some graduate school or graduate degree holder” group than the “some high school” cohort (49% versus 23%). Usage was lowest among the “18 to 24” age group, at 19%. The findings, collectively, appear to be point towards affluence as a major factor contributing to use of water-based paint.



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Q3F. Paint Thinner

The use of paint thinner has been trending down since 2005. Among the five longitudinal surveys, the 10% use rate in 2013 is the lowest percent (see Chart 4). The only significant demographic group difference found was males versus females on paint thinner use (14% among males; 7% among females).



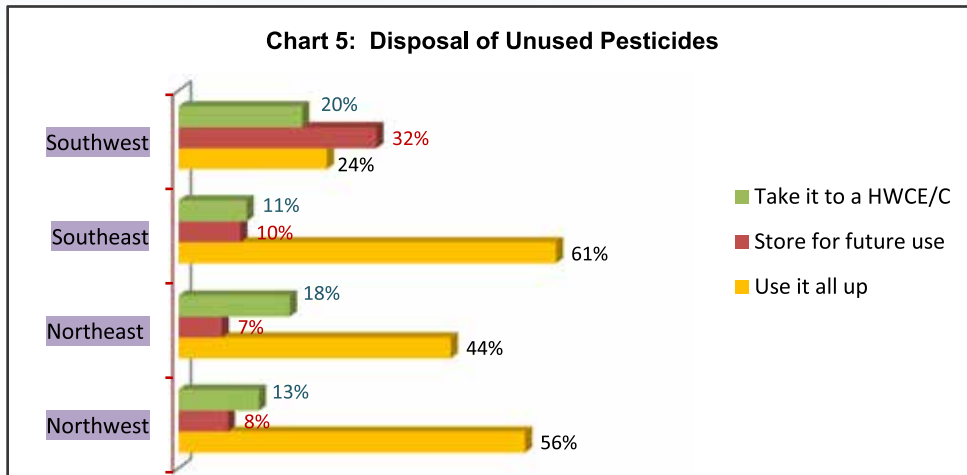
Q4. Residents' Disposal of Unused Pesticides

This question was designed as an open-ended question with pre-anticipated answer categories. Half of the sample that do use pesticides (N = 229) indicated they used up all of the pesticides until there is nothing left. The distant second most frequently mentioned response (15% of the 229 respondents) was “take it to a household hazardous waste collection event or Center.” Next, 11 % indicated, “store it for future use.” As shown in Appendix C, these three statistics remained unchanged from the 2009 survey levels. A more encouraging trend was the decrease of percent of households who “put the unused pesticides in the trash/landfill” (14% in 2009 to 10% in the present survey).

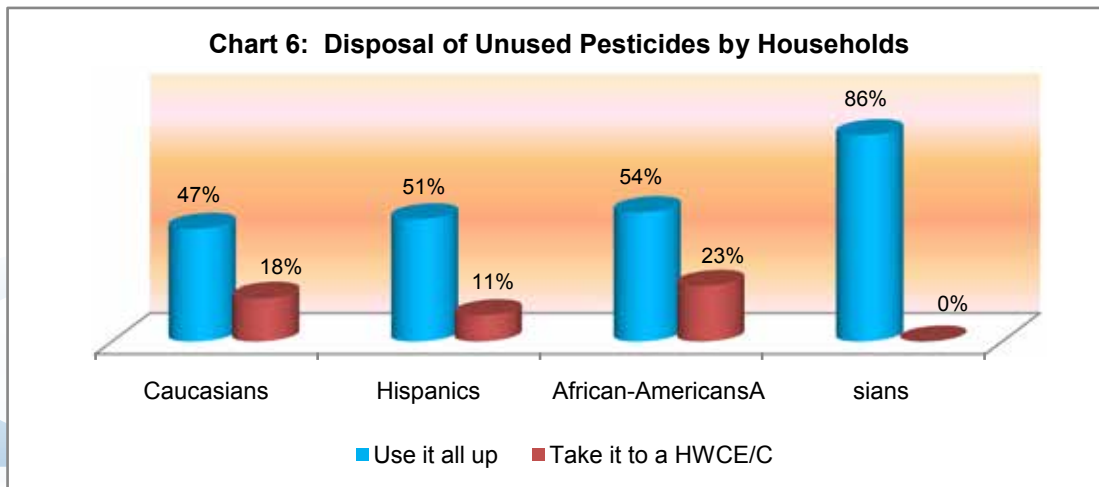
Homeowners are more likely to take their unused pesticides to a hazardous waste collection event or center than renters (21% vs. 7%). Renters, on the other hand, are more likely to “store unused pesticides for future use” (19% versus 6% among homeowners). Similar differences were observed for Spanish-speaking versus English-speaking respondents (27% vs. 9%). Survey participants interviewed in Spanish are more likely to take the unused pesticides to a hazardous waste collection event or center than their cohorts interviewed in English (63% compared to 48%).

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The “use it all up” responses were also significantly different across geographical regions and across ethnic groups (see Chart 5). The percentages of residents that take unused pesticides to a hazardous waste collection event or center also differed across ethnicities and regions.



As can be seen in Chart 6, some of the 86% of Asian respondents that articulated “use it all up” may have meant “store the unused pesticides for future use until there is nothing left.”



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Q5. Disposal of Unused Fertilizers

As shown in Appendix A, an overwhelming 71% mentioned, “use it all up.” (76% in 2009). In the present 2013 survey, “store it for future use” was a distant second most mentioned response (13%). The corresponding figures were 9% and 3% in 2005 and 2009, respectively (see Appendix C).

Q6. Disposal of Unused Paints and Varnishes

Approximately 28% “store it for future use” (27% in 2009). The next most mentioned response (24%) was “use it all up” (20% in 2009). While the 10% of 238 households (who were asked this Q6) indicated they “put it in the trash/ landfill” is still undesirable, it is much lower than the 22% noted in 2009. Approximately 14% take it to a hazardous waste collection event or Center, a slight improvement over the 2009 level of 12%. Other disposal methods included “putting it in the recycling bin,” “painter took it away,” and “let the paint dry up before putting it in the trash.” This last disposal practice was commonly articulated in the “Other (specify) ...” responses (see Appendix D, Q6).

Disposal methods differed between the language of interview, and homeowner versus renter (see Table C).

Table C: Disposal Methods

Q6	Own	Rent
Store it for future use	6%	19%
Other	26%	5%
Q6	Interviewed in English	Interviewed in Spanish
Take it to a HWCE/C	16%	5%
Store it for future use	22%	68%
Other	21%	0%

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Q7. Disposal of paint thinner or wash water

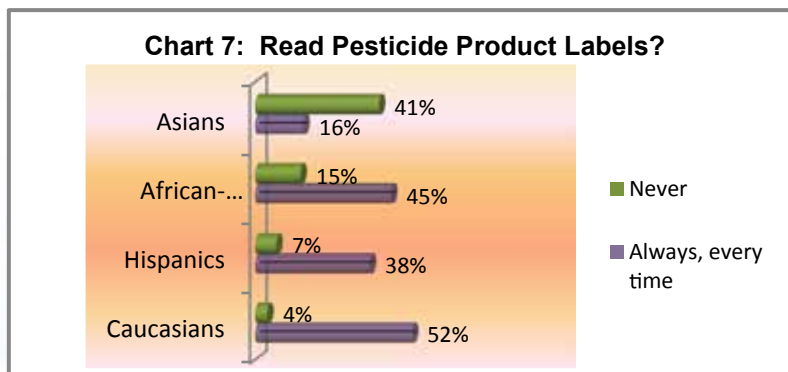
The response “store wash water for future use” received 37% of the mentions (by far the most frequently mentioned disposal practice – which really is not even a disposal method). The second most frequent response was “use it all up, nothing left” (15%). While these two answers represented over half of the responses, not much insight could be gleaned here. Previous surveys did not include “wash water” for this question. As can be seen from Appendix C, the “store it for future use” percent in 2013 has increased substantially from the 2005 and 2009 levels while “use it all up...” percent in 2013 has decreased sharply from the past two surveys.

Positive trends noted were a lower percentage of “put it in the trash/landfill” and “higher percentage of “take it to a hazardous waste collection event or center” in 2013 than in 2009. On the latter disposal practice, while there was substantial percentage difference between two ethnic groups, the sample for this question (Q7) was very small (i.e., N= 40). Hence, any findings should be interpreted cautiously.

Q8. How often do consumers read pesticide product labels?

This questionnaire item featured a new pre-coded answer category “Only for the first use of the product” in the 2013 Survey. Almost 29% mentioned label reading habit that corresponds to this answer category. Comparisons of results from past surveys for this question would not be valid due to the addition of this new answer choice.

The major four ethnic groups differed in their reading habits of pesticide product labels (see Chart 7). There was a relatively high percentage of “Never” as a response among Asians. Spanish language responses were 25% less likely to have read a product label for instructions for the product’s use. Males are more likely than females to “read labels only for the first use of the product” (35% vs. 22%). There were no distinct clear strong patterns of label reading habits and income or educational labels. Lower income and educational cohorts appear to be less prone to spend time reading or re-reading pesticide product labels.



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Q9. Considered using less-toxic pesticides?

The proportions that have used, or considered using, less-toxic pesticides have hovered slightly above the 50% (of total sample) benchmark since 2005. The percent not interested in the less-toxic product version has fluctuated between 16 and 23% across the 2005, 2009, and present survey. Approximately 45 to 37% of African-Americans and Asians have used the less-toxic pesticides. Among the ethnic groups, Asians (28%) exhibited the greatest interest to learn more about this less-toxic product. As shown in Table D, Spanish-speaking respondents are more interested in learning about less-toxic pesticides compared to their English-speaking respondents (28% vs. 14%). The age groups that have the highest use of these less-toxic products were in the “25 to 34” and “35 to 44” cohorts (38% and 37%).

Table D: Less-Toxic Pesticides

Q9. Considered using less-toxic pesticides?	Interviewed in English	Interviewed in Spanish
Yes, have used	27%	43%
Yes, but have not used	23%	6%
Not interested	21%	4%
Need more information	14%	28%

Q10. Source of information for less-toxic alternatives

By far, the two most frequently mentioned places to go for information on less-toxic alternatives are the Internet (41%) and hardware store (28%). The more educated respondents tend to think of the Internet, while the less-educated and Spanish-only speaking respondents tend to mention “hardware store” (see Table E).

Table E: Source of Information for Less-Toxic Pesticides

Q10. Source of information for less-toxic pesticides?	Some High School	Completed High School	College Graduate	Some Grad. School/Grad. Degree.	Interviewed in English	Interviewed in Spanish
Internet	13%	38%	58%	44%	45%	16%
Hardware Store	40%	34%	17%	14%	25%	39%
Refused/Unable to Answer					11%	39%

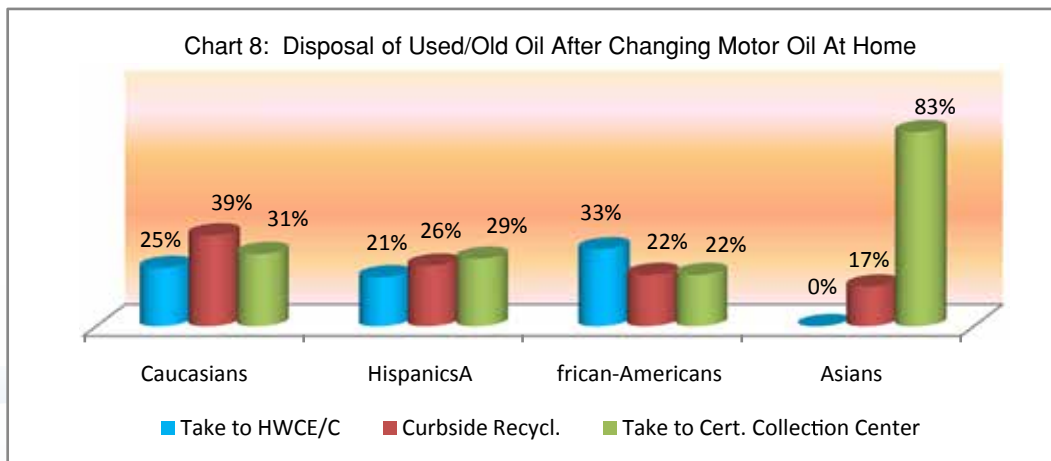
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Q11 & Q12. Change Motor Oil at Home & Disposal Practices

Approximately 40% of the total sample in the 2013 survey did change motor oil at home. This proportion fluctuated between the low of 33% (in 2001) and high of 48% in 2009 (see Appendix C). Spanish speakers are nearly twice as likely to have changed oil at home when compared to English speakers with 65% reporting having changed a car's oil at home, compared to 35.7% for English speaking respondents.

In the 2013 Survey, 22% took the used oil to a Hazardous waste collection center or event, which is a decline of 21% from the 2009 level. However, curbside oil recycling in 2013 gained 10% more participation, and certified collection center represented a new alternative place (in the 2013 Survey) to dispose of the used motor oil. Almost 70% of open-ended responses cited specifically Auto Zone/Pep Boys/Kragen/O'Reilly or Auto Parts Stores as disposal location.

Disposal practices differed significantly among the ethnic groups (see Chart 8). Respondents interviewed in Spanish may not be familiar with, or have convenient access to, certified collection centers. That might explain their low participation in this disposal practice compared to their counterparts interviewed in English (3% versus 36% for English-speaking respondents). This finding may have important implications as 65% of Spanish-only speaking respondents do change motor oil at their homes (36% for residents interviewed in English).



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Q13. Where does the rainwater finally go?

No particular answer dominated the responses. Almost a quarter of the sample thinks that rainwater goes to water basins. All groups including various ethnic groups, Spanish-only respondents versus English-speaking respondents, males versus females, and a number of age and income sub-groups differed in their perceptions of where the rainwater ends up. There were 21.5% of respondents that believe rainwater goes “to a sewage or wastewater treatment plant,” which is of concern and likely deems focused education and wide messaging.

Because there were such differentiating responses with no real pattern, it can be assumed that in general respondents do not know or understand where rainwater ends up.

Q14. Knowledge of community storm drains and rainwater runoffs

Slightly over half the sample had the correct understanding of the separate storm drain and sewer pipe systems in the Fresno/Clovis community. A higher proportion of males than females held this correct understanding (57% of males agreed to Q14A versus 44% of females). Agreement with Q14B statement (i.e., the correct understanding) was highest in the Southeast region (77%) and lowest in the Northeast (50%). An overwhelming 86% of Spanish-only speaking respondents agreed with the statement (63% among respondents interviewed in English). Approximately three-fourths of the “25 to 44” age group agreed while about 50% had the correct understanding among the 55 or older residents.

While just over 50% of the respondents agreed with the statement, it is important to understand that this particular question allowed for either a “agree” or “disagree” response. It can be assumed that some responses were based in common sense and not a true understanding. This would also explain why in Q13 when asked “where does rainwater finally go?” and respondents were offered multiple choices, only 23% of the respondents had the correct answer. There is a lack of understanding of where stormwater goes and where it ends up.

Q15. How serious is water pollution in our area?

Residents’ perceptions on the seriousness of water pollution in our area appeared to have trended slightly to “more serious” level since 2001 (see Appendix C: Q15 table). In the 2013 survey, the lowest income group (less than \$25,000) have more members in this cohort rating the pollution “Very Serious” (54%) than the “\$75,000 or more” income group (38% indicated “Very Serious”). More Spanish-only speaking respondents than their English-speaking counterparts rated the water pollution “Very Serious” (59% versus 44%). It appears that the less affluent in our Fresno/Clovis community are more “alarmed” by the water pollution threat.

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Q16. Perceived contributors to water pollution in our area

Based on the mean ratings on a 5-point scale (where “Don’t Know” responses coded “6” were removed prior to the mean computations), the perceived “high” contributors are:

- » Agricultural chemical and activities (mean = 4.0)
- » Improper disposal of used automotive fluids like oil and antifreeze (4.0)
- » Vehicles leaking oil and automotive fluids (4.0)
- » Use and improper disposal of lawn and garden chemicals (3.0)

Three of the four “high” contributors above were also rated the top three contributors to water pollution in our area in the 2009 survey. “Vehicles leaking oil and automotive fluids” was added as a new question in the 2013 survey. This question replaced “Operations of cars and trucks” question employed in 2009 and earlier surveys. In the 2005 survey, “Agricultural chemicals and activities” and “Use and improper disposal of lawn and garden chemicals” were among the top three perceived “high” contributors to water pollution. The community’s perceptions of pollutant contributors were fairly consistent across the three most recent surveys.

Renters significantly perceived greater contribution to water pollution by each of the nine items (out of ten items ascertained in Q16) than their homeowner counterparts. Only one contributor “Industrial and manufacturing plants” did not yield significant rating difference between these two sub-groups.

Since there were numerous rating differences among or between various demographic sub-groups, we will only report significant differences on the 2013 top four “high” contributors to water pollution. “Vehicles leaking oil and automotive fluids” had a mean rating of 4.3 from the “less than \$25,000” income group, in contrast to the mean of 3.8 from the “\$75,000 or more” income group. Table F demonstrates which target populations would benefit from concentrated messaging based on the average response by demographic. For example, for the polluter “Vehicles leaking oil,” young, less educated, Spanish-speaking Hispanics demonstrated a greater awareness of the level of contribution to water pollution for vehicles that leak oil. Combine that with the fact that we also know this group is more likely to change their oil at home, makes them a priority audience.

EXECUTIVE SUMMARY

Table F: Paired Comparisons of Mean Ratings of Contributors to Water Pollution

Age Groups	18 to 24	65 or older		
Vehicles leaking oil and automotive fluids	4.3	3.5		
Educational Levels	Some High School	College Graduate		
Agricultural chemical and activities	4.4	3.7		
Vehicles leaking oil and automotive fluids	4.5	3.7		
Ethnicity	Hispanics	Caucasians		
Improper disposal of used automotive fluids like oil and antifreeze	4.3	3.8		
Agricultural chemical and activities	4.1	3.7		
Vehicles leaking oil and automotive fluids	4.2	3.7		
Geographical Region	Southeast	Northeast	Southeast	Northwest
Vehicles leaking oil and automotive fluids	4.3	3.9	4.3	3.8
Gender	Female	Male		
Agricultural chemical and activities	4.1	3.8		
Use and improper disposal of lawn and garden chemicals	4.1	3.7		
Language of Interview	Spanish	English		
Vehicles leaking oil and automotive fluids	4.6	3.9		
Improper disposal of used automotive fluids like oil and antifreeze	4.7	3.9		
Use and improper disposal of lawn and garden chemicals	4.3	3.8		
Agricultural chemical and activities	4.4	3.9		

Means in the two columns of the same background color are compared, and the difference was found to be significant at the 0.05 level. Note Rating: 1 = Low and 5 = High.

EXECUTIVE SUMMARY

Q17. Major cause of water pollution problems

Since a respondent was to name only one major cause/contributor to water pollution problems in our area, many causes amassed just a few to several percentage points of mentions. In fact there were 112 open-ended responses with wide-ranging answers. Only “agricultural chemicals and activities” garnered 25% of the mentions (the most frequently noted cause), followed by 17% of mentions for “improper disposal of used automotive fluids like oil and antifreeze.” “Agricultural chemicals and activities” was also the most frequently mentioned cause in the 2001 (30%), 2005 (26%), and 2009 (18%) surveys. Consistent with the 2013 finding, “improper disposal of used automotive fluids like oil and antifreeze” was also the second most mentioned cause in the previous three surveys.

The “18 to 34” age groups are more likely to mention “improper disposal of used automotive fluids like oil and antifreeze” as the major cause of water pollution” (28% to 29% of mentions) than their older cohorts in the “35 to 54” age groups (4% to 7%). The less educated survey participants are more likely to also attribute “improper disposal of used automotive fluids ...” as the major cause than their more education counterparts. Southwest and Southeast residents are more likely to “blame” “improper disposal of used automotive fluids ...” (27% to 24%) than their northern neighbors (8% to 12% of mentions).

Asians and African-Americans also tend to mention this contributor more often than Caucasians and Hispanics. Caucasians are more likely to think that “agricultural chemicals and activities” is the major cause of water pollution. The relatively higher income groups (\$50,000 and above) more frequently attribute the major cause to agricultural chemicals and activities while the lower income groups think the major cause is the “improper disposal of used automotive fluids.”

Q18. Awareness of ad campaigns

Awareness of advertisements about stormwater runoff, stormwater basins, trash and litter, or used motor oil recycling remained high at 74%, slightly greater than the 71% reported in 2009. Ad awareness was extremely high among Spanish-only speaking respondents (88% said “Yes, have seen/heard ...”). Ad awareness was relatively lowest among African-Americans (60%). The levels were 75 to 77% in the other three main ethnic groups (Caucasian, Hispanic and Asian-American) surveyed.

EXECUTIVE SUMMARY

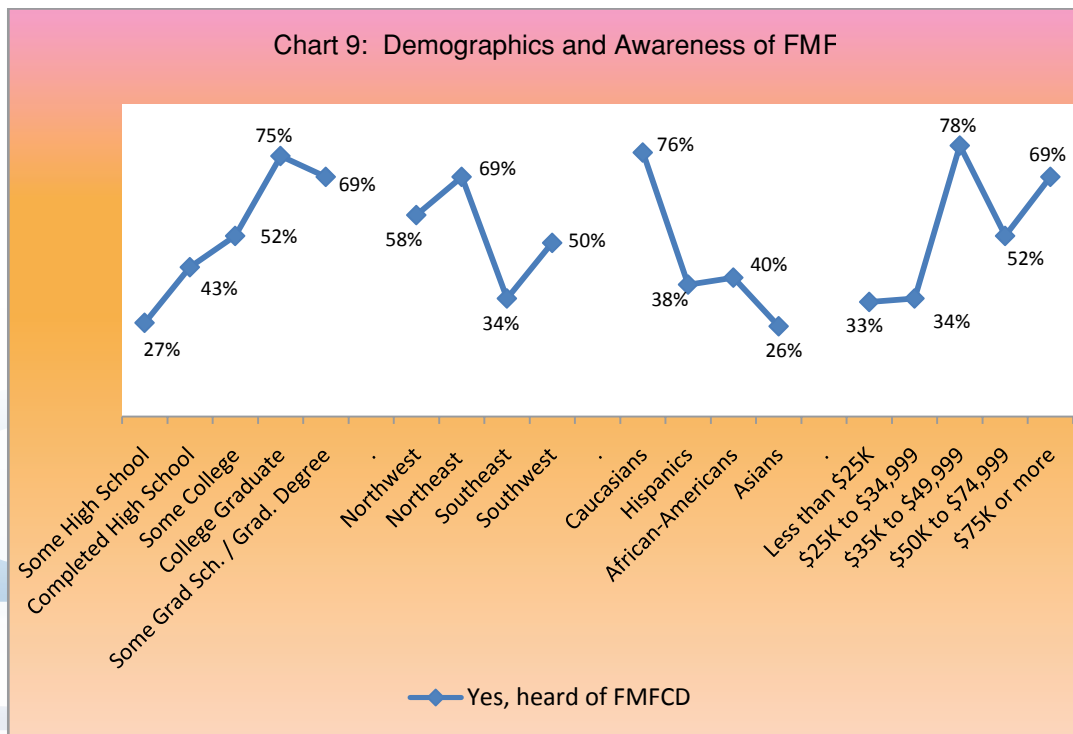
Q19. Local agency responsible for operations/management of our storm drain system

More than a third of the sample (36%) thinks the management of our storm drain system is the City government's responsibility. Only 12% correctly named Fresno Metropolitan Flood Control District (FMFCD), or Flood Control District as the agency in charge. The corresponding percent for 2009 was not available but the 2001 figure was also 12%. In the 2005 survey, 18% named FMFCD.

In the present 2013 Survey, 25% of African-Americans could correctly name FMFCD in Q19 while only 3% of Asians could. No Spanish-only speaking respondent named FMFCD as the local agency responsible for managing our storm drain system. Only 2% of participants with some high school education correctly named FMFCD. Again, the higher income and more educated groups did a better job of identifying FMFCD as the local agency in charge.

Q20. Heard of FMFCD?

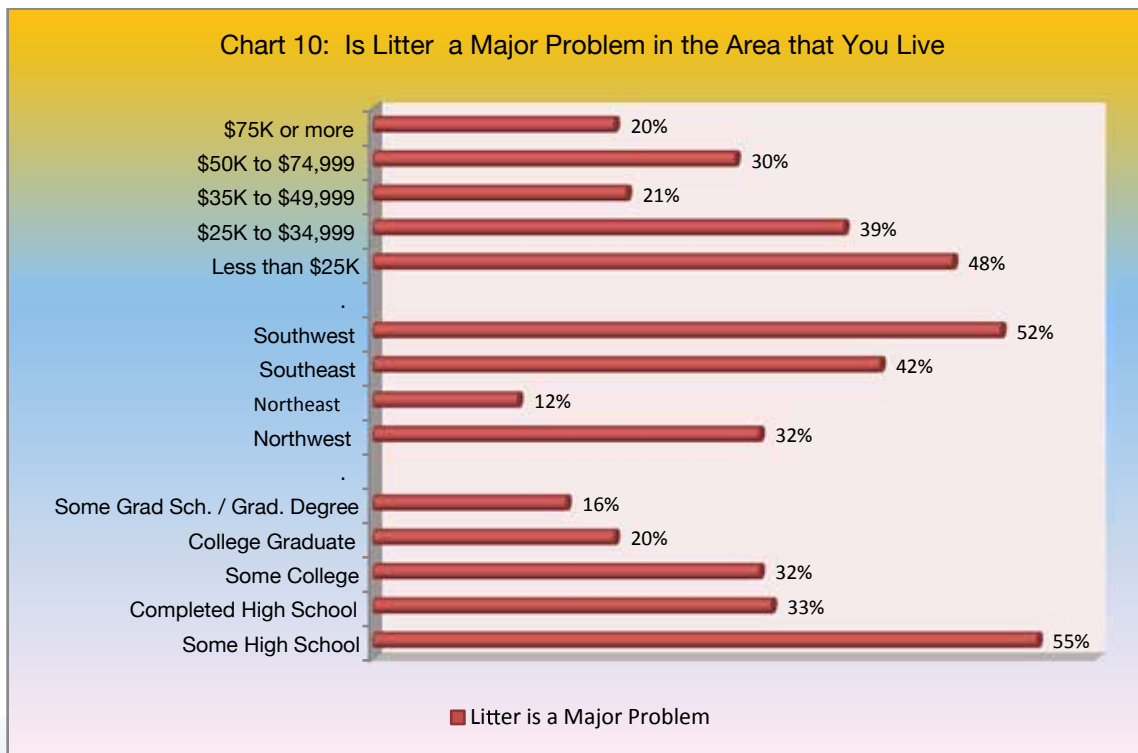
The percentage of those that had heard of FMFCD in 2013 had dropped substantially to 51% from the 64 to 67% in the previous five surveys. Awareness of FMFCD was associated with age of respondent. The younger residents were less aware. Income and educational level, as well as geographical region of residence, are associated with awareness of FMFCD (see Chart 9). For example, the Southern regions of Fresno/Clovis are more heavily represented by Spanish-speaking residents, who incidentally, also exhibited lower awareness of FMFCD.



EXECUTIVE SUMMARY

Littering

Although we only have the 2009 figure to compare, littering may be a growing major problem (10% increase in perception as a major problem since 2009 – see Appendix C). The proportion of survey participants that see litter in the area they live as a “major problem” varies greatly by ethnicity. Caucasians are less likely to see litter as a major problem (14%) than Hispanics or Asians (43% to 56% indicated “major problem”). A quarter of the African-American participants viewed littering in the area where they live as a “major problem.” Perspectives on this littering issue also vary according to where the residents live (see Chart 10). Participants’ educational and income levels may also impact their views on the littering problem via their choice of neighborhood for residency.



EXECUTIVE SUMMARY

Finally, demographics, again, may have an impact on the frequency of seeing people littering. Spanish-only speaking respondents reported higher incidence of seeing people “sometimes” littering intentionally or unintentionally (e.g., trash blowing out of the bed of a pick-up truck). Approximately 47% of Spanish-speaking respondents reported “sometimes seeing people littering” while only 22% of their English-speaking counterparts reported the same. Littering encounters also vary by geographical region (see Table G).

When it comes to self-reported littering, 15% of the “18 to 24” age group indicated “sometimes litter.” In contrast, only 2% of the “65 or older” group reported “sometimes litter.” While “sometimes litter” was only a small percent (i.e., 5.5% of the total sample), 10 % of African-Americans self-reported that they do litter sometimes.

Table G: Observation of Littering by Region of Residence

Region of residence	Often see people littering
Northwest	32%
Northeast	25%
Southeast	42%
Southwest	41%

APPENDIX A

Fresno Metropolitan Flood Control District

Public Awareness Survey 2013

Questionnaire

S1. Are you the Male/Female head of household?

Yes- Continue

No- Ask to speak to an adult head of household who is home now

D1. Gender Record

Male	200	50%
Female	200	50%

D2. Which of the following age categories best describes your current age?

Under 18- Term (Ask to speak to someone over the age 18)

Age Group	Freq.	Percent
18-24	59	15
25-34	89	22
35-44	68	17
45-54	68	17
55-64	56	14
65+	60	15

APPENDIX A

S2. Approximately how long have you lived in the Fresno/Clovis area?

Less than 6 Months	0	0%
6 to 12 months	3	< 1%
1 or more years	397	99.3%

S3. What is your zip code?

Zip Code	Freq.	%	Zip Code	Freq.	%
93611	39	10	93710	11	3
93612	24	6	93711	37	9
93619	24	6	93720	9	2
93650	10	2.5	93721	3	1
93701	11	3	93722	32	8
93702	35	9	93723	8	2
93703	11	3	93725	17	4
93704	10	2.5	93726	26	6.5
93705	18	4.5	93727	43	11
93706	18	4.5	93728	12	3
			93730	2	0.5

Q1. Do you maintain your own yard?

Yes	257	64%
No	132	33%
Sometimes	9	2%
Refused/unable to answer	2	0.5%

Q2. Do you apply your own fertilizers and or pesticides?

Yes	164	41%
No	212	53%
Sometimes	23	6%
Refused to answer	1	<0.5%

APPENDIX A

Q3. Now, I'd like to read a list of products that are found in some households. As I read each, please tell me if you or someone in your household has used this product in the past year or so.

	YES		NO	
	Freq.	%	Freq.	%
Pesticides inside your home	108	27	292	73
Pesticides or weed killers outside your home	196	49	204	51
Fertilizers	182	45.5	218	54.5
Oil-Based paint/Varnishes	59	15	341	85
Water-Based paint	143	36	257	64
Paint Thinner	41	10	359	90

(ASK IF YES TO USED PESTICIDES OR WEED KILLERS IN Q1.)

Q4. How do you normally get rid of or dispose of unused pesticides? N=229

	Freq.	%
Use it all up, nothing left	115	50
Bury it in the ground	0	0
Put it in the trash/Landfill	23	10
Pour it in the gutter/Street (Storm Drain)	1	<0.5
Pour it down a sewer/Household drain	-	-
Pour it on the dirt/Ground	1	<0.5
Store it for future use	25	11
Take it to a household hazardous waste collection event/Center	34	15
Other Specify _____	14	6
Refused/Unable to answer	16	7

(IF FERTILIZERS USED IN Q1 ASK)

APPENDIX A

Q5. How do you normally get rid of, or dispose of, unused fertilizers? N=182

	Freq.	%
Use it all up, nothing left	129	71
Bury it in the ground	1	0.5
Put it in the trash/Landfill	7	4
Pour it in the gutter/Street (Storm Drain)	0	0
Pour it down a sewer/Household drain	-	-
Pour it on the dirt/Ground	1	<0.5
Store it for future use	24	13
Take it to a household hazardous waste collection event/Center	7	4
Other Specify _____	2	1
Refused/Unable to answer	11	6

(IF OIL BASED PAINT/VARNISH/WATER BASED PAINT USED IN Q1 ASK)

Q6. How do you normally get rid of, or dispose of your unused paints and varnishes? N=238

	Freq.	%
Use it all up, nothing left	39	24
Bury it in the ground	-	-
Put it in the trash/Landfill	16	10
Pour it in the gutter/Street (Storm Drain)	1	0.6
Pour it down a sewer/Household drain	-	-
Pour it on the dirt/Ground	-	-
Store it for future use	46	28
Take it to a household hazardous waste collection event/Center	23	14
Other Specify _____	29	18
Refused/Unable to answer	8	5

(IF PAINT THINNER USED IN Q1 ASK)

APPENDIX A

Q7. How do you normally get rid of, or dispose of, paint thinner or the wash water that you use to clean up after painting? N = 41

	Freq.	%
Use it all up, nothing left	6	15
Bury it in the ground	1	2
Put it in the trash/Landfill	2	5
Pour it in the gutter/Street (Storm Drain)	1	2
Pour it down a sewer/Household drain	1	2
Pour it on the dirt/Ground	-	-
Store it for future use	15	37
Take it to a household hazardous waste collection event/Center	8	20
Other Specify _____	3	7
Refused/Unable to answer	4	10

Q8. When using products like pesticides, how often do you read the products label instructions? Would you say you read them:

(READ EACH)

N = 400	Freq.	%
Only for first use of the product	114	28.5
Always, every time	166	41.5
Most of the time	28	7
Some of the time	27	7
Never	37	9
Refused/Unable to answer	28	7

Q9. In the past year, have you considered using less-toxic pesticides? (READ LIST)

	Freq.	%
Yes, and I have used them	115	29
Yes, But I have not used them	89	22
No, I need more information	61	15
No, I'm not interested in less-toxic pesticides	75	19
Refused/Unable to answer	60	15

APPENDIX A

Q10. Where would you go for information on less-toxic alternatives?

	Freq.	%
Internet	163	41
Nursery	27	7
Hardware Store	111	28
Supermarket	9	2
Government Agency	4	1
UC Extension/Master Gardeners	4	1
Other Specify _____	25	6
Refused/Unable to answer	57	14

Q11. Have you or anyone in your household ever changed the oil in your car, or anyone else's car, while at home?

Yes	161	40%
No	239	60%

Q12. How do you/they normally get rid of, or dispose of used motor oil? N=161

	Freq.	%
Use it all up, nothing left	-	-
Bury it in the ground	0	0
Put it in the trash/Landfill	0	0
Pour it in the gutter/street (storm drain)	0	0
Pour it down a sewer/household drain	0	0
Pour it on the dirt/Ground	0	0
Store it for future use	3	2
Take it to a household hazardous waste collection event/Center	35	22
Curbside Oil Recycling	48	30
Certified Collection Center	51	32
Other Specify _____	20	12
Refused/Unable to answer	4	2.5

APPENDIX A

Q13. As you may know, rainwater flows along street gutters, in the end where does the water finally go?

	Freq.	%
To stormwater basins, basin parks	94	23.5
To the San Joaquin River or some other river or stream	39	10
To groundwater	50	12.5
To a canal/irrigation canal	24	6
To a sewage plant, wastewater treatment plant	86	21.5
To some sort of place where it is stored or goes into the ground Specify_____	10	2.5
Other Specify_____	31	8
Don't know	66	16.5

Q14. I'm going to read five statements and ask you to tell me if you agree or disagree with each. Here's the first Statement:

A. Our community's storm drain and sewer are separate systems and use different pipes. Would you say you agree or disagree with that statement?

Agree	202	50.5%
Disagree	96	24%
Don't know	102	25.5%

B. Water and other substances that flow through the storm drains go to a treatment plant to be processed and filtered to remove pollutants?

Agree	263	66%
Disagree	74	18.5%
Don't know	63	16%

C. Water and other substances that flow through the storm drains go to a storm water basin where pollutants settle out and the water soaks in the ground.

Agree	242	60.5%
Disagree	78	19.5%
Don't know	80	20%

APPENDIX A

D. Rain water turns air pollution into water pollution.

Agree	243	61%
Disagree	80	20%
Don't know	77	19%

E. Overwatering creates runoff that carries fertilizers and pesticides into the storm drain system.

Agree	333	83%
Disagree	38	9.5%
Don't know	29	7%

Q15. How serious do you think water pollution is in our area?

Very Serious	187	47%
Somewhat Serious	166	41.5%
Not at all Serious	31	8%
Refused to answer/unable to answer	16	4%

Q16. There are many things that contribute to water pollution in our area. Using a scale of 1 to 5 with "5" being High (H) and "1" being Low (L), how would you rate each of the following as to how much they contribute to water pollution? (5 = High) (1 = Low) (6 = Don't Know or DK/Unable to answer)

	1 (L)	2	3	4	5 (H)	6 (DK)
Industrial and manufacturing plants	4	9.5	21	17	36.5	12
Sewer/Wastewater treatment plants	20	12	22	13	17	15.5
Improper disposal of trash in city streets	8	8	18	25	39	3
Improper disposal of used automotive fluids like oil and antifreeze	5	8	14	20	49	4
Use and improper disposal of lawn and garden chemicals	2.5	10	20.5	24	38	5
Household cleaning products used outdoors	13	17	24	18	21	6
Storm water runoff from homes and businesses	8	13	28.5	20	19	12
Agricultural chemical and activities	5	7.5	14	26	41	6
Vehicles leaking oil and other automotive fluids	5	6	16	22.5	46	4
Tire wear	14	16	26.5	14	17	13

Numbers in cells are percents

APPENDIX A

Q17. What do you think is the major cause of the water pollution problems we have? N=400

(DO NOT READ; PROBE FOR ONE MAJOR CAUSE ONLY)

	Freq.	%
Industrial and manufacturing plants	6	1.5
Sewer/Wastewater treatment plants	7	2
Improper disposal of trash in city streets	27	7
Improper disposal of used automotive fluids like oil and antifreeze	66	16.5
Use and improper disposal of lawn and garden chemicals	25	6
Household cleaning products used outdoors	6	1.5
Retail businesses and stores	1	<0.5
The operation of cars and trucks	9	2
Storm water runoff from homes and businesses	15	4
Agricultural chemicals including pesticides, Sprays, and fertilizers	99	25
Other Specify _____	106	26.5
Refused to Answer/Unable to Answer	33	8

Q18. Have you heard or seen any advertisements including TV and radio commercials, bus or newspaper ads about storm water runoff, storm water basins, trash and litter, or used motor oil recycling?

Yes	296	74%
No	100	25%
Don't know	4	1%

APPENDIX A

Q19. As far as you know, which local agency is responsible for the operations and management of our storm drain system? N=400

	Freq.	%
City of Fresno, Clovis, Government	142	35.5
County of Fresno Government	26	6.5
Other County Government	0	0
Fresno Irrigation District	20	5
Fresno Metropolitan Flood Control District or Flood Control District (FMFCD)	47	12
Other Specify _____	30	7.5
Refused/Unable to answer	135	34

(IF FMFCD NOT MENTIONED IN Q17 ASK)

Q20. Have you ever heard of the Fresno Metropolitan Flood Control District? N=353

Yes	181	51%
No	169	48%
Don't Know	3	1%

Q21. Do you pour household cooking grease down the drain or put it into the trash container?

	Freq.	%
Down the drain	21	5
Into the trash	317	80
Both	17	4
Other	38	9.5
Don't Know	7	2

APPENDIX A

Q22. Now I would like to ask you about litter. Would you see litter in the area in which you live is a major problem, minor problem, or not a problem at all?

Major	128	34%
Minor	165	41%
Not at All	103	26%
Don't know	4	1%

Q23. How often do you see people littering, such as throwing trash or cigarettes butts out the car window or trash blowing out of the bed of a pickup truck? Would you say often, sometimes, rarely or never?

	Freq.	%
Often	137	34
Sometimes	105	26
Rarely	118	29.5
Never	38	9.5
Don't know	2	0.5

Q24. Now thinking about you... Would you say that you often, sometimes, rarely, or never litter? N=400

	Freq.	%
Often	5	1
Sometimes	22	5.5
Rarely	95	24
Never	278	69.5
Don't know	0	0

APPENDIX A

Demographics

Now in order to classify your responses along with others, I need to ask a few questions about you.

D3. Do you own or rent your current home?

Own	220	55%
Rent/Lease	178	44.5%
Other Specify_____	1	<0.5%
Refused	1	<0.5%

D4. What is the last grade in school you completed? DO NOT READ

	Freq.	%
Some high school or less	53	13
Completed High school (Grade 12)	111	28
Some college	105	26
College graduate	81	20
Some graduate school/Graduate degree	43	11
Refused	7	2

D5. What is your ethnic background? DO NOT READ

	Freq.	%
Caucasian/White	141	35
Latino/Hispanic	180	45
African American/Black	20	5
Asian-American	32	8
American Indian	3	1
Mixed race	12	3
Other Specify_____	8	2
Refused	4	1

APPENDIX A

D6. And finally, which of the following categories best describes your total household income last year before taxes? READ EACH

	Freq.	%
Less than \$25,000	101	25
Between \$25,000-34,999	57	14
Between \$35,000-49,999	43	11
Between \$50,000-74,999	84	21
75,000 OR MORE	99	25
Refused (DO NOT READ)	16	4

RECORD Language conducted in. (N = 400)

English	339	85%
Spanish	51	13%
Hmong	10	2.5%

APPENDIX B

Zip Codes for each Geographical Region of Fresno/Clovis

Zip Codes By Region

Northwest

93722
93704
93705
93711
93723
93650

Northeast

93710
93720
93730
93611
93612
93619

Southeast

93725
93726
93727
93702
93703

Southwest

93706
93701
93721
93728

APPENDIX C

Fresno Metropolitan Flood Control District

Public Awareness Surveys 1994 To 2013

Comparisons of Results Across Surveys

Question Numbering based on the 2013 Survey Questionnaire

Q3. Now, I'd like to read a list of products that are found in some households. As I read each, please tell me if you or someone in your household has used this product in the past year or so.

Product Usage. Percent that said "YES"	1994	1997	2001	2005	2009	2013
Pesticides inside your home			45	51	38	27
Pesticides or weed killers outside your home			41	70	64	49
Fertilizers			33	62	55	45.5
Oil-Based paint/Varnishes		12	15	22	19	15
Water-Based paint		36	40	54	57	36
Paint Thinner	19	13	16	26	22	10

blank cell/s = percent was not available/question was not asked for that year's survey/question was substantially changed.

(ASK IF YES TO USED PESTICIDES OR WEED KILLERS IN Q1.)

APPENDIX C

Q4. How do you normally get rid of or dispose of unused pesticides?

Percent that mentioned a particular disposal practice	1994	1997	2001	2005	2009	2013
Use it all up, nothing left	60	48		45	48	50
Bury it in the ground	0	0	1	1	< 1	0
Put it in the trash/Landfill	19	24		11	14	10
Pour it in the gutter/street (Storm Drain)	0	0	1	0	0	< 0.5
Pour it down a sewer/household drain	0	1		0	1	0
Pour it on the dirt/ground	1	0	0	0	7	< 0.5
Store it for future use	18	11	16	14	12	11
Take it to a household hazardous waste collection event/Center		9	13	21	9	15
Other Specify _____	9	3	3	2	9	6
Refused/Unable to answer	4	5	4	5	9	7

blank cell/s = percent was not available/question was not asked for that year's survey/question was substantially changed.

(IF FERTILIZERS USED IN Q1 ASK)

Q5. How do you normally get rid of, or dispose of, unused fertilizers?

Percent that mentioned a particular disposal practice	2001	2005	2009	2013
Use it all up, nothing left	58	72	76	71
Bury it in the ground	2	2	1	0.5
Put it in the trash/landfill	11	5	5	4
Pour it in the gutter/street (Storm Drain)	0		0	0
Pour it down a sewer/Household drain	0		0	0
Pour it on the dirt/Ground	0		0	< 0.5
Store it for future use	21	9	3	13
Take it to a household hazardous waste collection event/Center	2	9	4	4
Other Specify _____				1
Refused/Unable to answer	4	3	5	6

1994 and 1997 data were not available

(IF OIL BASED PAINT/VARNISH/WATER BASED PAINT USED IN Q1 ASK)

APPENDIX C

Q6. How do you normally get rid of, or dispose of your unused paints and varnishes?

Percent that mentioned a particular disposal practice	2009	2013
Use it all up, nothing left	20	24
Bury it in the ground	< 1	0
Put it in the trash/Landfill	22	10
Pour it in the gutter/Street (Storm Drain)	0	0.6
Pour it down a sewer/Household drain	3	0
Pour it on the dirt/Ground	2	0
Store it for future use	27	28
Take it to a household hazardous waste collection event/Center	12	14
Other Specify _____	10	18
Refused/Unable to answer	5	5

(IF PAINT THINNER USED IN Q1 ASK)

Q7. How do you normally get rid of, or dispose of, paint thinner or the wash water that you use to clean up after painting?

Percent that mentioned a particular disposal practice □	1997	2001	2005	2009	2013
Use it all up, nothing left	46	19	29	34	15
Bury it in the ground	0	1	2	0	2
Put it in the trash/Landfill	12	3	8	9	5
Pour it in the gutter/street (Storm Drain)	4	0		0	2
Pour it down a sewer/Household drain	0	0	3	1	2
Pour it on the dirt/Ground	5	1	1	2	0
Store it for future use	16	60	21	27	37
Take it to a household hazardous waste collection event/Center	9	11	25	7	20
Other Specify _____	5	1	1	9	7
Refused/Unable to answer	4	3	11	10	10

APPENDIX C

Q8. When using products like pesticides, how often do you read the products label instructions? Would you say you read them:

(READ EACH)

Percent that mentioned a particular reading habit	2001	2005	2009	2013
Only for first use of the product	Not one of the answer choices in the survey			28.5
Always, every time	62	63	56	41.5
Most of the time	16	13	18	7
Some of the time	9	9	13	7
Never	8	7	5	9
Refused/Unable to answer	5	8	7	7

1994 and 1997 data were not available, or question was not asked in previous survey/s

Q9. In the past year, have you considered using less-toxic pesticides? (READ LIST)

Percent	2005	2009	2013
Yes, and I have used them	28	30	29
Yes, But I have not used them	23	25	22
No, I need more information	23	12	15
No, I'm not interested in less-toxic pesticides	16	23	19
Refused/Unable to answer	10	11	15

Earlier data was not available, or question was not asked in previous survey/s

APPENDIX C

Q10. Where would you go for information on less-toxic alternatives?

	2005	2009	2013
Internet	39	56	41
Nursery	10	4	7
Hardware Store	26	20	28
Supermarket	3	1	2
Government Agency	3	2	1
UC Extension/Master Gardeners	4	< 1	1
Other Specify _____		11	6
Refused/Unable to answer		13	14

blank cell/s = percent was not available/question was not asked for that year's survey/question was substantially changed.

Q11. Have you or anyone in your household ever changed the oil in your car, or anyone else's car, while at home?

	1994	1997	2001	2005	2009	2013
Percent that said "YES"	43	36	33	38	48	40
Percent that said "NO"	56	64	67	62	52	60

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Q12. How do you/they normally get rid of, or dispose of used motor oil?

Percent that mentioned a particular disposal practice	1994	1997	2001	2005	2009	2013
Bury it in the ground	5	3	2		1	0
Put it in the trash/Landfill	8	5	5	4	3	0
Pour it in the gutter/street (storm drain)	< 1	1	2	0	0	0
Pour it down a sewer/household drain	< 1	1	0	0	0	0
Pour it on the dirt/Ground	4	3	2	0	1	0
Store it for future use	1		3	3	1	2
Take it to a household hazardous waste collection event/Center	53	72	81	83	43	22
Curbside Oil Recycling					20	30
Certified Collection Center						32
Other Specify _____	5	5	2	2	33	12
Refused/Unable to answer	6	8	4	4	2	2.5

The last answer choice may not have incorporated “Refused” in the surveys conducted in 1994 through 2009.

blank cell/s = percent was not available/question was not asked for that year’s survey/question was substantially changed.

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Q13. As you may know, rainwater flows along street gutters, in the end where does the water finally go?

Percent that mentioned	1994	1997	2001	2005	2009	2013
To stormwater basins, basin parks	18	21	22	30	20	23.5
To the San Joaquin River or some other river or stream	8	14	11	9	7	10
To groundwater	8	19	15	15	9	12.5
To a canal/irrigation canal	1	3	5	3	3	6
To a sewage plant, wastewater treatment plant	11	18	24	17	20	21.5
To some sort of place where it is stored or goes into the ground Specify _____	4	2	6	4	2	2.5
Other Specify _____	2	4	7	2	*	8
Don't know	48	18	17	18	17	16.5

*The 2009 “Other” percent was 25% in previous report. This figure does not appear to be correct based on the percents found in the other surveys.

Q14. I'm going to read five statements and ask you to tell me if you agree or disagree with each. Here's the first Statement:

A. Our community's storm drain and sewer are separate systems and use different pipes. Would you say you agree or disagree with that statement?

Percent that responded	1994	1997	2001	2005	2009	2013
Agree	34	48	36	32	35	50.5
Disagree	46	39	33	40	40	24
“Don't Know”	20	13	31	28	24	25.5

2009 and earlier surveys employed a statement worded in the opposite context of “...sharing the same underground pipe systems ...”

B. Water and other substances that flow through the storm drains go to a treatment plant to be processed and filtered to remove pollutants?

Percent that responded	1994	1997	2001	2005	2009	2013
Agree	50	67	57	55	65	66
Disagree	36	26	21	24	22	18.5
“Don't Know”	14	7	22	21	12	16

APPENDIX C

C. Water and other substances that flow through the storm drains go to a stormwater basin where pollutants settle out and the water soaks in the ground. This is a new question starting in the 2013 Survey.

Percent that responded	2013
Agree	60.5
Disagree	19.5
“Don’t Know”	20

D. Rain water turns air pollution into water pollution.

Percent that responded	2005	2009	2013
Agree	63	65	61
Disagree	15	20	20
“Don’t Know”	21	14	19

E. Overwatering creates runoff that carries fertilizers and pesticides into the storm drain system.

Percent that responded	2005	2009	2013
Agree	86	93	83
Disagree	6	4	9.5
“Don’t Know”	8	3	7

Q15. How serious do you think water pollution is in our area?

Percent that responded	1994	1997	2001	2005	2009	2013
Very Serious	41		37	37	43	47
Somewhat Serious	44		45	45	43	41.5
Not at all Serious	14		14	14	9	8
Refused to answer/unable to answer	1		4	4	5	4

blank cell/s = percent was not available/question was not asked for that year’s survey/question was substantially changed.

APPENDIX C

Q16. There are many things that contribute to water pollution in our area. Using a scale of 1 to 5 with “5” being High (H) and “1” being Low (L), how would you rate each of the following as to how much they contribute to water pollution? (5 = High) (1 = Low) (6 = Don’t Know or DK/Unable to answer)

Mean based on a 5-point rating scale from 1 = Low to 5 = High	1997	2001	2005	2009	2013	2013 Std. Dev.
Industrial and manufacturing plants	3.9	3.6	3.7	4.0	3.8	1.2
Sewer/Wastewater treatment plants	3.0	2.8	2.9	4.0	2.9	1.4
Improper disposal of trash in city streets	3.9	3.6	3.8	4.0	3.8	1.3
Improper disposal of used automotive fluids like oil and antifreeze	3.9	3.7	3.7	4.1	4.0	1.2
Use and improper disposal of lawn and garden chemicals	3.6	3.5	3.7	3.9	3.9	1.1
Household cleaning products used outdoors	3.0	2.9	3.3	3.4	3.2	1.2
Stormwater runoff from homes and businesses	3.1	3.0	3.3	3.4	3.3	1.2
Agricultural chemical and activities	4.0	3.8	3.8	3.9	4.0	1.2
Vehicles leaking oil and other automotive fluids					4.0	1.2
Tire wear					3.0	1.3

blank cell/s = mean rating was not available/question was not asked for that year’s survey/question was substantially changed.

APPENDIX C

Q17. What do you think is the major cause of the water pollution problems we have?

(DO NOT READ PROBE FOR ONE MAJOR CAUSE ONLY)

Percent that mentioned	2001	2005	2009	2013
Industrial and manufacturing plants	4	6	8	1.5
Sewer/Wastewater treatment plants	10	4	1	2
Improper disposal of trash in city streets	10	12	9	7
Improper disposal of used automotive fluids like oil and antifreeze	14	13	16	16.5
Use and improper disposal of lawn and garden chemicals	6	6	9	6
Household cleaning products used outdoors	1	1	< 1	1.5
Retail businesses and stores				< 0.5
The operation of cars and trucks	3		5	2
Stormwater runoff from homes and businesses	2	5	4	4
Agricultural chemicals including pesticides, Sprays, and fertilizers	30	26	18	25
Other Specify _____	8	13	31	26.5
Refused to Answer/Unable to Answer	11	8	7	8

blank cell/s = mean rating was not available/question was not asked for that year's survey/question was substantially changed.

Q18. Have you heard or seen any advertisements including TV and radio commercials, bus or newspaper ads about stormwater runoff, stormwater basins, trash and litter, or used motor oil recycling?

Percent that responded	1997	2001	2005	2009	2013
YES	76	56	68	71	74
NO	23	41	31	28	25
Don't Know	1	4	1	1	1

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Q19. As far as you know, which local agency is responsible for the operations and management of our storm drain system? N=400

Percent that responded	1994	1997	2001	2005	2009	2013
City of Fresno, Clovis, Government	39	37	43	37	40	35.5
County of Fresno Government	6	9	12	9	7	6.5
Other County Government					1	0
Fresno Irrigation District	5	3	5	7	3	5
Fresno Metropolitan Flood Control District or Flood Control District (FMFCD)	8	14	12	18	1	12
Other Specify _____	12	5	4	6	19	7.5
Refused/Unable to answer	29	29	24	24	28	34

(IF FMFCD NOT MENTIONED IN Q17 ASK)

Q20. Have you ever heard of the Fresno Metropolitan Flood Control District?

Percent that responded	1994	1997	2001	2005	2009	2013
YES	66	67	64	67	65	51
NO	34	31	31	32	34	48
Don't Know	0	1	5	1	1	1

Q21. Do you pour household cooking grease down the drain or put it into the trash container?

	Freq.	%
Down the drain	21	5
Into the trash	317	80
Both	17	4
Other	38	9.5
Don't Know	7	2

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This question started in the 2013 Survey.

Q22. Now I would like to ask you about litter. Would you see litter in the area in which you live is a major problem, minor problem, or not a problem at all?

	2009	2013
Major	22%	34%
Minor	53%	41%
Not at All	25%	26%
Other	1%	N/A
Don't know	< 1%	1%

Q23. How often do you see people littering, such as throwing trash or cigarettes butts out the car window or trash blowing out of the bed of a pickup truck? Would you say often, sometimes, rarely or never?

	2009	2013
Often	34	34
Sometimes	29	26
Rarely	29	29.5
Never	8	9.5
Don't Know	< 1	0.5

Q24. Now thinking about you... Would you say that you often, sometimes, rarely, or never litter?

	2009	2013
Often	1	1
Sometimes	5	5.5
Rarely	23	24
Never	71	69.5
Don't know	0	0

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FMFCD 2013 Surveys

Verbatims

- Q4 29 We go through a pest company
- Q4 561 Haven't used any
- Q4 602 Waste pick-up at the airport
- Q4 1720 Professional service handles that
- Q4 2497 Don't use them
- Q4 2802 Don't use them personally, we hire a company to do the yard
- Q4 3133 Company comes and sprays the yard once a year
- Q4 3336 Pest control does it for me
- Q4 4487 Put it with the recyclables
- Q4 4505 A company takes care of it
- Q4 4694 Read the recommendation on the label
- Q4 4916 Really don't use them
- Q4 5083 Put it in an empty container and recycle it
- Q4 6776 Recycle unused products

- Q5 2802 Company uses them
- Q5 3336 Gardener disposes of it for me

- Q6 92 Dry, then throw it out
- Q6 784 Dry it out, then throw it away
- Q6 894 Recycle
- Q6 1285 Air-dry, then dispose
- Q6 1295 Let it dry out, that's it
- Q6 1343 Wait until it dries out then dispose of it
- Q6 1496 Let the paint dry out, then dispose of it, that's it
- Q6 1720 Let the paint dry out, then dispose of the can
- Q6 2010 Have had a little bit, dumped it on a board and let it dry out
- Q6 2363 Don't use oil based
- Q6 2437 City recycling
- Q6 2903 Let it dry out, then throw it out
- Q6 3077 Dry out and put in the trash
- Q6 3125 Take the lid off, let it dry out and put in the trash
- Q6 3328 Trying to figure it out
- Q6 3392 Either store it or let it dry out then toss it

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- Q6 3445 Dry out and put in trash
- Q6 3560 Dry and put out
- Q6 3753 Painters remove the paint cans
- Q6 3786 Donate them to an art school for theater props
- Q6 4349 Dry out, then throw away
- Q6 4505 Leave the lid open and wait until it dries out, then dispose containers
- Q6 4670 Set them out, wait until they dry then toss the cans
- Q6 4932 Dry out, then throw in recycling
- Q6 4989 Painter takes them with him after he finishes painting
- Q6 5219 Keep until dry, then dispose
- Q6 7434 Not applicable
- Q6 8434 I let the cans dry out
- Q6 10537 Take it to the paint dealer

- Q7 2010 Dump it into an old can
- Q7 3090 Only use water based paints
- Q7 3905 Let it evaporate

- Q10 681 The pest control guy I use
- Q10 1079 I read books. I read books that I order from out of town because I don't like using chemicals
- Q10 1295 Magazines
- Q10 1712 PG&E Go Green
- Q10 1778 Green Peace
- Q10 1795 Home remedy book
- Q10 1869 Word of mouth
- Q10 1949 Fresno Fair
- Q10 2258 Read about it
- Q10 2828 Family
- Q10 3250 Use a company that does that, I let them worry about that...
- Q10 3358 Ask at the store
- Q10 3560 Call someone
- Q10 3753 Ask my husband
- Q10 3905 Gardening magazines
- Q10 4480 Asking a friend
- Q10 4670 Fresno State Ag. Department
- Q10 4792 Fresno County Ag. Department

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- Q10 4831 Pesticide Company
- Q10 4989 Don't buy that kind of stuff, cause we have someone coming in and do all that
- Q10 5083 From friends that work at City of Fresno
- Q10 5370 Natural eco-friendly magazines
- Q10 5855 Can't read or write, so I don't know where to find it
- Q10 8499 Word of mouth
- Q10 10537 County Ag Bureau

- Q12 858 Recycle Center
- Q12 3358 Take it to O'Reilly
- Q12 3600 Recycled it
- Q12 4480 Ask my husband
- Q12 4569 Put it aside in a container next to the trash bins and the trash truck takes it
- Q12 4763 Pour it into a milk gallon and leave it aside with trash bins and trash truck takes it
- Q12 5983 Put it in a container and take it to Kragen
- Q12 5427 Take to an auto parts store
- Q12 5729 Took it to Auto Zone
- Q12 5892 Take it to Auto Zone
- Q12 5940 Take it to Auto Zone
- Q12 6375 Take it to O'Reilly
- Q12 7815 Take it to Auto Zone
- Q12 7912 Take it to Auto Zone
- Q12 8863 Put it in a recycling container and take it to Auto Zone
- Q12 9059 Take it to O'Reilly
- Q12 9404 Take it to Auto Zone
- Q12 9842 Take it to Pep Boys
- Q12 10439 Take it to an auto parts store

- Q13 958 In the front yard
- Q13 1176 In our drinking water
- Q13 1460 Back to our faucets
- Q13 1496 Drain pond
- Q13 1522 The Ocean
- Q13 1728 Sewer

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- Q13 3126 The Ocean
- Q13 3177 The Ocean
- Q13 3236 Sewer, I think?
- Q13 3250 Evaporates and goes into the air
- Q13 4208 The Ocean
- Q13 4408 Recyclable water system
- Q13 4652 Unsure
- Q13 4714 Unsure
- Q13 4970 The Ocean
- Q13 5083 Drainers
- Q13 6150 I really don't know the process, but we end up using the same water again.
- Q13 6403 Goes to The Ocean
- Q13 6481 Too many places
- Q13 7279 Back to our house
- Q13 7397 Recycled back to us
- Q13 7445 Pacific Ocean
- Q13 7777 Toilet
- Q13 7798 Sewer
- Q13 7859 Flows to The Ocean
- Q13 8278 Goes to The Ocean
- Q13 8407 Back to our house
- Q13 8499 Into our drinking water
- Q13 9070 Recycled back into drinking water
- Q13 9743 Goes to the end of the block
- Q13 10122 Back into homes of people

- Q17 29 Lack of education mixed with lack of disposal places
- Q17 36 Improper education of waste products

- Q17 100 We use too much water, we use too much purified water for lawn usage
- Q17 166 Government
- Q17 389 Littering
- Q17 515 Things going down the drain of a sink
- Q17 562 Variety of things like home drain disposal
- Q17 705 People who do careless stuff
- Q17 838 Over all contaminates

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- Q17 967 Improper maintenance of the facility
- Q17 975 The cost of diluting the water
- Q17 1079 The chemicals and medications dumped down the drain
- Q17 1176 Carelessness
- Q17 1390 People not being responsible with unused goods
- Q17 1460 Pouring things down the drain and in the drain
- Q17 1476 Lack of education
- Q17 1496 People making bad decisions about pollution
- Q17 1512 People dumping things in lakes and littering
- Q17 1522 People not being cautious with their pesticides
- Q17 1618 City of Fresno, Government
- Q17 1630 Combination of everything and the age of the system
- Q17 1712 Everything
- Q17 1795 Population and too many people using chemicals for everything
- Q17 1877 The drainage system
- Q17 1949 San Francisco and L.A. pollution that blows into our county
- Q17 1956 The garbage, we all contribute to it
- Q17 2010 Unsure
- Q17 2306 The Government
- Q17 2322 Diesel
- Q17 2329 We don't realize the value of water and need more education on proper usage of water
- Q17 2363 Educating people and enforcing violators or lack of
- Q17 2382 Too many people
- Q17 2721 The way we live
- Q17 2759 Over population
- Q17 2903 Peoples negligence
- Q17 3038 Overpopulation
- Q17 3067 Too many people live in the Valley
- Q17 3077 Carelessness
- Q17 3094 Combination of lots of things
- Q17 3142 Carelessness
- Q17 3250 People – look at some of the stuff they throw out their windows...
- Q17 3383 Lack of knowledge and not knowing what we put into our soil
- Q17 3474 Ignorance and laziness
- Q17 4081 Leaking underground storage tanks for gas and the use of BVCP
- Q17 4202 Unsure

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- Q17 4294 Too much contribution from people
- Q17 4319 Unsure
- Q17 4331 People not caring that water is a lifeline, and just dump it on the ground
- Q17 4480 People not being educated, or caring about the problem
- Q17 4569 A little of them all because not every person is cautious about the same thing
- Q17 4596 People – most don't care what they flush down the toilet
- Q17 4668 People and companies not disposing of it properly
- Q17 4670 Air pollution
- Q17 4688 Combination of all the things we talked about
- Q17 4694 People being responsible
- Q17 4714 People don't know how to dispose of things
- Q17 4806 Overpopulation
- Q17 4949 Everything that's thrown into the gutters
- Q17 4980 Trash and Fertilizer
- Q17 5092 Lack of regulations
- Q17 5147 What we put down the drain and toilet – Medicine and so forth
- Q17 5300 Not enough rain in the Valley
- Q17 5370 Everyone needs to do a better job then what they are doing
- Q17 5424 System is not up to date and stupidity
- Q17 6008 Just maybe the cars...
- Q17 6151 Homeowners dump waste into gutters and pollute the water
- Q17 6230 People themselves
- Q17 6271 People disposing things the way they should
- Q17 6273 People don't care about how they dispose of their waste
- Q17 6454 Everything we discussed
- Q17 6481 A little bit of everything
- Q17 6798 Air Pollution
- Q17 6833 Carelessness – people disposing trash and oils incorrectly
- Q17 6995 People not caring enough because of ignorance, they don't think
- Q17 7278 All of the issues that were mentioned earlier
- Q17 7284 Everything combined
- Q17 7322 Irresponsible people
- Q17 7397 Little towns around us dumping things in the water
- Q17 7434 All of it
- Q17 7445 Irresponsible people

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- Q17 7507 Irresponsible people
- Q17 7814 Not enough treatment
- Q17 7907 Improper disposal of chemical waste
- Q17 7928 People being irresponsible
- Q17 8235 Over application of chemicals
- Q17 8434 People being careless, especially companies that waste
- Q17 8499 Mismanagement of people or populations using chemicals and other pollutants
- Q17 8628 The City should keep a log on everything that need to be maintained and get every thing done
- Q17 8977 Improper disposal of chemicals
- Q17 9257 People not being aware of the damage that they cause by littering, they just throw trash on the ground and it goes into the gutters
- Q17 9375 Smog and people not properly recycling their oil
- Q17 9380 Taking water for granted and misusing
- Q17 9428 People
- Q17 9444 Over pumping of ground water
- Q17 9600 As a society we don't care
- Q17 9743 Industrial plants and factories
- Q17 9852 Past regulations
- Q17 9884 Everything - the reason why our water is dirty
- Q17 9975 Carelessness of people
- Q17 10070 People in general
- Q17 10122 People themselves
- Q17 10169 The pipes – They may have rust?
- Q17 10223 People need to be more responsible
- Q17 10252 People don't care enough and they throw things down the sewer
- Q17 10384 Nobody really cares anymore

- Q19 562 Unsure
- Q19 602 Several agencies are involved depending on where you are
- Q19 1563 Unsure
- Q19 1795 Environmental impact agency
- Q19 1869 EPA
- Q19 2306 Unsure
- Q19 2322 Pinedale Water District
- Q19 2401 Unsure

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- Q19 2594 Every agency plays a role in management and they are all connected in some way or another
- Q19 2655 Unsure
- Q19 3070 Unsure
- Q19 3506 City Water Department
- Q19 3906 Water Works Department
- Q19 3977 Unsure
- Q19 4451 Water Department
- Q19 4487 Unsure
- Q19 4577 Unsure
- Q19 4714 Unsure
- Q19 4970 Unsure
- Q19 5344 Caltrans
- Q19 5855 I'm not sure
- Q19 6481 Everyone
- Q19 7284 Everybody
- Q19 7758 Everyone
- Q19 8113 I don't know
- Q19 8433 Everyone
- Q19 8511 Everyone
- Q19 8977 Waste Management
- Q19 10070 Waste management
- Q19 10537 Housing Pollution Board

- D3 6419 Live with other people
- D5 529 Pacific Island
- D5 1496 Rather not disclose
- D5 2130 Asian
- D5 2408 Italian
- D5 3304 Armenian
- D5 3358 Puerto Rican
- D5 5424 Portuguese
- D5 8499 Irish