

SURVEY99 REPORT

ZAP EDUCATION COMMITTEE

September 28, 1999

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Blower Use At One Residence Impacts 8 to 14 Neighbor Properties



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EXECUTIVE SUMMARY and RECOMMENDATIONS

In residential neighborhoods, blowers operated by landscape workers and homeowners create obvious noise pollution and clouds of air pollution. The one operated across the street as I write this is measuring up to 78dB at a distance of over 70 feet.

A survey, Survey99, was created by the ZAP Education Committee to determine opinions and perceptions of California residents regarding the use of leaf blowers (sometimes "blowers" herein) for residential landscape maintenance. With the assistance of a marketing consultant, an unbiased, nonjudgmental survey was constructed. The order of questions was designed to avoid influencing answers to subsequent questions. Virtually all surveys were taken, at random, at public places such as beaches, malls and a farmers' market.

Participants consist of a wide variety of income groups. All were over 18 years of age, and nearly equal between those over and under 45 years of age. Participants reside in California in a residence they own or rent. The 53 Participants represent 38 different zip code areas.

Highlights of Survey99 Responses

Many people are at home when blowers are being used in their neighborhoods. They are directly exposed to blower noise and pollution not only from their own property, but also from neighboring properties. That could add up to from 6-9 properties. A large proportion of these properties consist of hard surfaces ("hardscape"), such as sidewalks, walkways, driveways, carports, patios, decks, porches and street gutters.

1. Health Concerns - Participants. In a majority of households, someone has one or more health conditions which are particularly sensitive to dust, mold and other irritants contained in the Particulate Matter which, once made airborne by blowers, cannot be contained. A majority of Participants are aware of the health concerns that surround the use of leaf blowers. "This secondhand noise is every bit as irritating as the secondhand smoke from cigarettes."¹

- Over two-thirds of all Participants are disturbed by the noise and/or the odor of gas fumes of blowers in their neighborhoods.
- In a typical week, nearly two-thirds of all Participants change their daily routine due to the imposition of blowers. Of this group, 56% do so often or daily. 75% of all Participants would like to see more restrictions on blowers.

¹ Roger B. Swain, Ph.D., Science Editor at Horticulture; host of PBS Victory Garden, in Groundwork, 1994, as quoted in Conservation Law Foundation website <http://www.clf.org/pugs/sound/htm>.

- 62% of all Participants would like to see blowers banned, while only 15% disagree.
- 2. Violations of blower bans.** Because of widespread noncompliance with blower bans, some Participants living in a city with a blower ban were not aware the ban was still in force. Participants who knew there was a law were very irritated by the fact that there was a lack of compliance and enforcement.

Of Participants who have had blowers used on their property in the previous 12 months:

- 84% reported that work crews consist of more than one member, and that
 - 74% of blowers used are gas.
- 3. Health concerns - workers.** Blower manufacturers recommend the use of protective gear for eyes, ears and face for everyone within 50 feet of an operating blower. The widespread noncompliance with this minimal safety precaution is a subject that calls for more research and action on the part of manufacturers, distributors and worker safety regulators.

In general, landscape workers do not request pay increases and employers do not seem to offer them. However, three-fourths of Participant employers indicated a willingness to discuss pay adjustments, and all Participant employers who had been asked for a pay increase agreed.

RECOMMENDATIONS

1. Legislation and Further Health Studies:

The primary recommendation of ZAP is that there be a minimum three year moratorium on all California statewide legislation which regards operation of gas powered garden equipment, and in particular blowers, while health studies² are designed, funded (by grants if necessary), completed and reported. Private groups which could assist in such studies include the Lung Association and groups concerned with Asthma.

2. Protective Gear Education:

ZAP recommends that manufacturers and retail distributors of blowers and safety gear and gardener associations make available information regarding safety gear recommended by health experts. Why it should be worn, where to find it, how much it might cost. Workers should be encouraged to protect themselves.

² See Appendix "Study Proposal Re Blowers Only"
Report99

Manufacturers of blowers may have warnings in their user manuals. The lack of compliance shown by Survey99 and other studies confirm that, though a purchaser may read the manual, it cannot be presumed the end user will even have access to it.

ZAP believes the health of landscape workers has an economic value. We believe worker health concerns greatly outweigh any possible timesaving from the use of blowers.

Manufacturers of safety gear might provide local government business licensing agencies with information to be handed out.

Retail distributors of blowers could prominently post in their business establishments warnings, definitions of protective gear recommended by health experts, and carry those recommended types of gear.

Gardener and/or landscape associations could purchase safety gear in large quantities in order to provide it to workers at a discount. Where workers cannot afford such gear, perhaps their associations could offer financial grants which would provide such safety gear for free.

3. Further Studies.

Focus Groups. ZAP recommends the use of professionally designed and administered focus groups to clarify public attitudes toward landscape maintenance alternatives, including power equipment, standards of appearance, environmental and health impacts. Representatives of interested groups should be encouraged to comment during the survey design phase..

Nonrandom Studies. The Public at large wants to be heard. People who heard ZAP was doing a survey wanted to participate, but had to be turned down for this random study. Even amongst Participants chosen at random, "I hate those machines" was often heard. The decision whether to "Agree" or "Disagree" in various strengths with Survey99 statements regarding stronger legislation or bans was based on Participant's assumptions regarding the effect those acts would have on gardeners and other workers, not on Participant's own welfare.

Attitudes of Gardeners. What prevents them from wearing protective gear? Lack of knowledge? Disbelief that there is a need? Lack of opportunity or funds to purchase such gear?

SURVEY99 DESIGN

Intention. Survey99 was designed to gather unbiased answers. If Participants first inquired about the survey and/or its sponsors, they were informed of Senator Burton's SCR19³, which seeks information regarding the health and environmental effects of leaf blowers on their operators and on the general public. Participants were told survey results would be sent to the California State Legislature, and asked to hold all other questions until after the survey was completed.

Administration. Surveys were administered by unpaid volunteers. It was imperative that Survey99 responses accurately reflect the experiences and opinions of as diverse a sample of Participants as possible. Persons were approached in a random manner for personal interviews at shopping malls, sports and music events, Farmers' Markets and public beaches. A small minority of surveys were taken door-to-door or by telephone. Only California residents of voting age were surveyed.

Affiliation of Survey99 Author. Survey99 was designed by Diane Wolfberg, Chair of Zero Air Pollution ("ZAP") Education Committee. ZAP is a grassroots group of concerned residents and workers in Los Angeles, California who joined together in 1995 to secure a ban against 2-stroke motor gas leaf blowers in Los Angeles California. ZAP, as an organization, was created in response to a gardener association which formed and united with blower manufacturers, to fight the ban. Costs associated with ZAP activities are borne by individual members who incur those costs themselves.

In addition to other volunteers, Diane Wolfberg and George Wolfberg also administered Surveys, designed the database for data entry, tallied the answers and composed this Survey99 Report. Diane Wolfberg is a former teacher and legal secretary. George Wolfberg is retired from the office of the Los Angeles City Administrative Officer. Many, if not all, Los Angeles City Council members he worked with throughout his 35-year tenure will vouch for his competence and integrity. Both have a history of volunteer work with civic and nonprofit groups, as have most of the members of ZAP.

Design Consultant. Surveys were designed with the assistance of Anya van Leeuwen, who holds an MBA in marketing.

³ See Appendix.
Report99

SURVEY99 DESIGN, continued.

Limitations. Volunteers were given only two weeks to complete the surveys. Of 53 completed surveys, over 38 zip codes and a wide variety of income levels are represented.

Where a blower has not been used on the property of a Participant's residence in the past 12 months, questions regarding blower use were skipped. All findings about blower use and protective gear concern only blower use on the property of Participants' residences.

Where a statistic represents a sub-group of Participants, rather than the whole, it is so noted as representing only those who answered.

Participants were picked at random. For instance, a table and signs (which did not indicate the subject matter of the survey) were set up at a farmers' market. People who showed interest were surveyed. At two beach areas, which were available to public transportation, a particular walking path was pre-determined. All people within that path who were not sleeping, engrossed in reading, or in animated conversation were approached. At the shopping mall, shops which did not have customers at the time were entered, and people who appeared to be employees or owners were approached.

Upon commencement of the survey taking, it soon became clear Survey99 represents opinions of California residents who had not been heard from before. A question regarding possible affiliation with special purpose groups involved in this controversy would have made that clear.

Total Number of Surveys 53. Owners=36, Renters = 17

PURPOSE OF THE SURVEY99

It is believed that Los Angeles is the largest market for leaf blowers in the world. The use of leaf blowers has been a contentious issue in California for many years, as evidenced by bans in 20 cities, and regulations in many more. The right of a local government to regulate leaf blower usage in its jurisdiction has been challenged by various bills proposed in the California State Legislature since 1998. Two proposed 1999 bills will carry over into the year 2000.

SCR19 (Burton) requested the California State Air Resources Board to make a report of existing studies which regard the health and environmental effects of leaf blowers on the public at large and on blower operators.

Survey99 was designed to reveal perceptions and opinions of the public at large, regarding residential landscape maintenance practices and any problems associated with blower use. The goal of Survey99 was to find facts, which might help proponents and opponents of blower bans have an understanding of each other's concerns. Concerns of ZAP members include the following:

1. Blower Intrusion

- Residents in some California neighborhoods suffer daily assaults of blower noise and pollution. This results in persons at home, including retirees, parents and caregivers to infants and the sick, having to change their routine in some way. For instance, they might change locations within the impacted property, and/or close doors and windows in order to engage in conversation, concentrate on work, or relax. Use of blowers also creates sleep problems for night shift workers who must sleep during the day, as well as others who must rest during this period.
- The impact of blower use is exacerbated when the odors and noise of blowers are added to those of lawn mowers and edgers. With the advent of larger landscape crews, all of these machines are frequently used at the same time, despite the advice of at least one manufacturer to "use only one piece of equipment at a time. . . ."⁴ If all three are used at once, the noise and odors are that much more disturbing. If all three are used separately, the noise and odors are extended over a longer period.
- Lawnmower noise, in one study, inhibited the response of passersby to a woman in need of help. When the mower was turned off, indifference was replaced by helpfulness.⁵

PURPOSE OF SURVEY99, continued

⁴ Robin Pendergrast sidebar, Turf, February 1998.

⁵ Swain, Ibid.

2. Harmful Gardening Practices

- Independent landscape contractors⁶ and gardening experts⁷ state that blowers are harmful to the environment, the soil and vegetation.
- Workers are encouraged by manufacturers to use power blowers, instead of water, for "areas such as gutters, screens, patios, grills, porches and garages,"⁸ areas that are more easily and more quickly cleaned with a broom or rake.
- The Amish have a phrase for gardening practices which allow for hearing the sounds of nature, the sounds of reassurance that the world is alive and well. "We are the quiet on the land."⁹

3. Health Concerns

- The two-stroke engine used on blowers has been banned in the form of personal water craft (jet skis) from use on Lake Tahoe and in lakes in Washington state because of its noise and air and water pollution.¹⁰
- A 1997 study by Kaiser Permanente linked Particulate Matter to excess mortality and morbidity, and to higher asthma mortality rates between 1970 and 1994. This is a period of time during which blower use increased greatly.
- Recent studies have demonstrated that agricultural products and animal feces from landscape and farming activities are a major source of ocean pollution in such areas as Los Angeles and Orange Counties,
- The South Coast Air Quality Management District, in 1990, linked leaf blowers to air pollution and in 1997 reported that Particulate Matter could "potentially damage the lower respiratory tract and the gas-exchange region of the lung."¹¹ A 1994 report¹² stated that air toxics (e.g. benzene, a carcinogenic component of gasoline) are not safe at any level. Fuel spills, exhaust emissions and the blowing up of gasoline residue from streets are all concerns which prompted efforts to ban leaf blowers.

⁶ Triple Crown Landscape Co.

⁷ L.A. Times, Robert Smaus, July 13, 1997

⁸ Robin Pendergrast sidebar, Turf, February 1998.

⁹ Swain, Ibid

¹⁰ Sierra, January/February 1998, "Deep-Sixing Two-Stroke"

¹¹ Appendix I Health Effects, November 1996.

¹² Appendix I, Health Effects, November 1994.

PURPOSE OF SURVEY99, continued

4. Conflicting Statements and Opinions

- Conflicting statements and opinions have been presented based on evidence that can be linked to blower use. Yet there appear to be no serious health studies specifically related to residential use of leaf blowers and/or other gardening equipment
- There are conflicting findings and/or opinions regarding the amount of time blowers are used, what they are used for, as well as the time differences between blowers and other methods of leaf and debris gathering.

In the absence of such specific health studies, it appears that a more general study regarding quality of life issues, actual landscape maintenance practices, and economic questions, would help California state legislators make informed decisions in the future. Economic facts were not called for in Senator Burton's SCR19, therefore they are not discussed specifically in this Report. They are discussed generally as they relate to lack of both automatic and requests for pay raises.

5. Economics

- Conflicting statements made by a landscape contractor's association create confusion by declaring, on the one hand, that workers will have to be fired if blowers cannot be used, and, on the other hand, that more workers would have to be hired to use rakes and brooms.
- Independent landscape workers, themselves, have said and been quoted as being unwilling to discuss pay adjustments with employers because they fear their job will be given to a lower-cost competitor;¹³
- Proponents of leaf blower bans believe these economic conjectures should not outweigh health and quality of life issues surrounding the use of blowers.

¹³ The Outlook, February 14, 1998.
Report99

HIGHLIGHTS OF SURVEY99 FINDINGS

PROFILE OF PARTICIPANTS

1. Residences:

Nearly all Owners of their residences (hereafter "Owners") owned single family residences. Those who rent or lease their residences (hereafter "Renters") were mixed between those living in single family residences, Condominiums, and apartments.

2. Zip Codes:

There were nearly as many different zip codes (38) as there were Participants (53). The Zip Code spread primarily centered in and around Los Angeles, California.

3. Gender:

Often, males and females were interviewed together. The final "gender" choice was left up to each couple.

44% Male.

56% Female.

4. Age: (Optional question)

56% of Participants who cared to share that information were 18 to 45 years of age.

44% were over 45 years of age.

5. Household Income: (Optional question):

Of Participants who cared to share that information:

43% have annual incomes of under \$51,000.

57% have annual incomes of \$51,000 or over.

RESIDENTIAL LANDSCAPE MAINTENANCE PRACTICES

1. Who is Home When Landscape Maintenance Occurs:

53% of all Participants are always or usually home when landscape maintenance is performed at their residence.

26% are sometimes home. 21% are never or almost never home.

2. Who Hires Landscape Workers:

46% of all Participants (or someone living in their residence) contract out the yard work themselves. The rest do not.

36% of all Participants have a homeowner's association or a landlord who takes care of all or a portion of Participant's property. The rest do not.

The question: "Do you do your own landscape maintenance" was not asked, but that fact was volunteered by many Participants.

3. Financial Negotiations:

Only five Participants have ever been asked for a pay raise. Four agreed to the request. One negotiated a mutually acceptable amount. None fired their workers or hired someone new.

Only one Participant regularly offers a pay raise, and that increase is given annually.

86% of Participants stated they would be willing to discuss a pay adjustment with workers if workers were willing to use a method other than blowers for leaf and debris gathering. This did not necessarily infer the need for a pay increase.

Several Participants volunteered they would want such a discussion to include specific differences in the time it takes to gather leaves and debris on their property, if any.

Two Participants volunteered they would discuss changes in landscape design, if necessary to keep the pay the same.

RESIDENTIAL LANDSCAPE MAINTENANCE PRACTICES, Continued.

4. Frequency:

The majority of landscape maintenance by hired workers occurs once a week where Participants are Owners.

Only two Renters answered this question. One said twice a week, the other said four times a year.

5. Duration of Time for Regular Maintenance Per Work Session:

82% of all Renters report that regular landscape maintenance takes over 30 minutes. 70% report it takes 45 minutes to up to 2 hours per visit.

80% of all Owners report that regular landscape maintenance takes more than 30 minutes. 61% report it takes 45 minutes to more than 60 minutes.

12% of all Participants reported that regular weekly landscape maintenance takes less than 30 minutes.

46% reported between 30 and 60 minutes.

42% reported over 60 minutes.

6. Size of Work Crew:

84% of work crews of Participants who have had blowers used on their property in the previous 12 months consist of two to four workers. Often, these workers have specific assigned jobs. Therefore, the same leaf blower operator is exposed to risks related to blowers on every job.

36% of the time there are two workers, 44% of the time there are three workers, and 4% of the time there are four or more workers in the crew. Only 16% of the crews consisted of one worker.

LEAF BLOWER USE PATTERNS

1. Methods of leaf and debris gathering:

Participants were asked to select up to two methods of leaf and debris gathering used on their property.

18% of all Participants listed water as one of the methods.

37% listed rake.

18% listed broom.

24% listed blowers.

3% had no idea.

53% of the properties of all Participants are cleaned with alternatives to blowers.

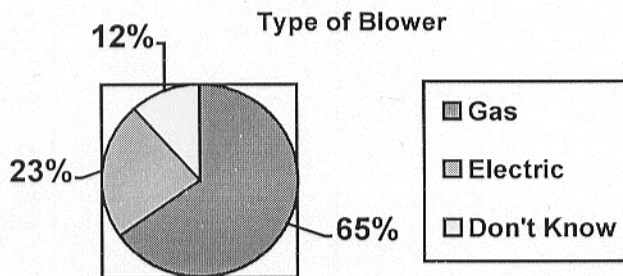
2. Type of Blower Used:

Of Participants who have had blowers used on their property in the previous 12 months:

65% of blowers used are gas blowers.

23% of blowers used are electric and/or battery operated.

12% of participants did not know what type of blower was used.



(Note: "gas blower" indicates the universal, or generic, term for a type of machine, rather than the determination of a type of fuel).

LEAF BLOWER USE PATTERNS, Continued.

3. Incidence of Blower Use:

Leaf blowers have been used in the past twelve months at the properties of 49% of Participants.

Of Participants who have had blowers used on their property in the previous 12 months:

90% of Renters believe blowers are used on their property for 15-30 minutes each work session.

60% of Owners believe blowers are used on their property for 5-10 minutes each work session.

More than one blower is sometimes used.

4. Who Operates Blowers.

Of Participants who have had blowers used on their property in the previous 12 months:

8% of blowers that are used, are operated by Participant or a member of their household. These Participants use electric blowers.

84% of blowers that are used, are operated by hired workers.

8% were operated by someone else.

5. Hardscape:

Hardscape includes sidewalks, walkways, driveways, carports, streets, patios, decks, and/or porches.

Of Participants who have had blowers used on their property in the previous 12 months:

43% of the property in over one-third of responses consists of hardscape.

60% of the property in over one-fourth of responses consists of hardscape.

Blower use on hardscape:

68% of Participants state that blowers are used regularly on the hardscape of their property.

On 14% of Participants' properties, blowers are not used on hardscape.

The difference of 18% represents Participants who did not know.

LACK OF PROTECTIVE GEAR USE

Where blowers had been used on their property in the previous 12 months, Participants were asked their recollection of the use of protective gear to protect eyesight, hearing and breathing passages of blower operators and of other work crew members. Breathing protection was phrased "protective professional face mask," and it was explained to the majority of Participants that this did not include scarves. Still, many counted what were painter's or other light masks.

Some Participants counted any kind of eye glasses as protective gear.

1. Crew Members Other than Blower Operators:

Of Participants who have had blowers used on their property in the previous 12 months:

95% indicate no protective gear is worn by other members of the crew.

As noted in the section on Residential Landscape Maintenance Practices, when blowers are used, 85% of the time, the work crew size is more than one. It must be assumed that many of them work closer to the blowers than the 50 feet distance for nonoperators recommended by some manufacturers.

2. Breakdown Regarding Specific Safety Gear Worn by Blower Operator:

Of Participants who have had blowers used on their property in the previous 12 months, the majority of answers fell into the following two categories:

Never Worn:

53% of the answers indicate facemask is never worn.

62% of the answers indicate eye protection is never worn.

69% of the answers indicate ear protection is never worn.

Always Worn:

13% of answers indicate a facemask was always worn.

19% of answers indicate eye protection was always worn.

9% of answers indicate ear protection was always worn.

Other answers fell into the "Usually," "Sometimes" or "Almost Never" categories.

Because of comments made by Participants as they answered these questions, it is believed that they vastly understated the lack of protective gear use.

OTHER FINDINGS

Health Issues

1. Household Health:

30% of Participants and/or someone living in their residence suffers from asthma or emphysema, allergies, eczema, and/or hearing loss. In a majority of these households, an adult suffered from more than one of these conditions.

81% of those Participants or someone living in their residence suffer from asthma, emphysema or environmental allergies.

These conditions were specified because of health study evidence that noise and air pollution, especially Particulate Matter ("PM"), contribute to these conditions.

2. Health Issues Surrounding the Use of Leaf Blowers:

Participants could list as many health issues as they wished.

86% of Owners voiced awareness of health concerns related to the use of blowers. An overwhelming majority of Owners believe several health problems are linked to the use of blowers.

59% of Renters voiced awareness of specific health concerns related to the use of blowers. Renters were more likely to list a simple "yes," that they are aware of health problems linked to blower use, or to list only one health problem.

A pharmacist Participant pointed out that there has been a dramatic rise in asthma medications she distributes in the past few years. She is particularly concerned about air pollution caused by the dust and all that it encompasses.

OTHER FINDINGS: Health Issues, Continued.

Responses were grouped for reporting purposes into concerns about dust, noise and gas fumes. Dust issues were mentioned 55% of the time. Noise issues, 19% of the time, gas fumes, 16% of the time, and no answer or the answer "no" was given 10% of the time.

Brief examples of various health issues, as phrased by Participants:

OWNERS:

NOISE	DUST	GAS FUMES	Miscellaneous
Hearing problems	Allergies	2-cycle engine pollution	Chronic Obstructive Pulmonary Disease.
Loud	Asthma	Cancer (caused by gas blowers)	Crazy-making noise.
Noise	Breathing	Inhalation of toxic fumes	Debris in ocean.
Sound stress	Bronchial Problems	Gas exhaust	Dirty: "Have to clean cars, windows, stucco walls off."
	Dust pollutants	Gas fumes	Environmentally not good.
	Lung disease		Gas is bad for the environment.
	Nose problems		"Gastrointestinal" (Perhaps meant Gastrointestinal).
	Particles dispersion Particulate Matter		Nervous system.
	Pollen		Pets bothered.
	Short(ness of) Breath		

RENTERS:

NOISE	DUST	GAS FUMES	Miscellaneous
Hearing problems	Allergies.	Exhaust.	Eye damage.
Ear problems	Asthma.	Gas fumes.	Stress.
Noise	Bacteria Spread.	Toxic gas fumes.	Valley Fever.
	Dust.		
	Particulates.		
	Pollen.		

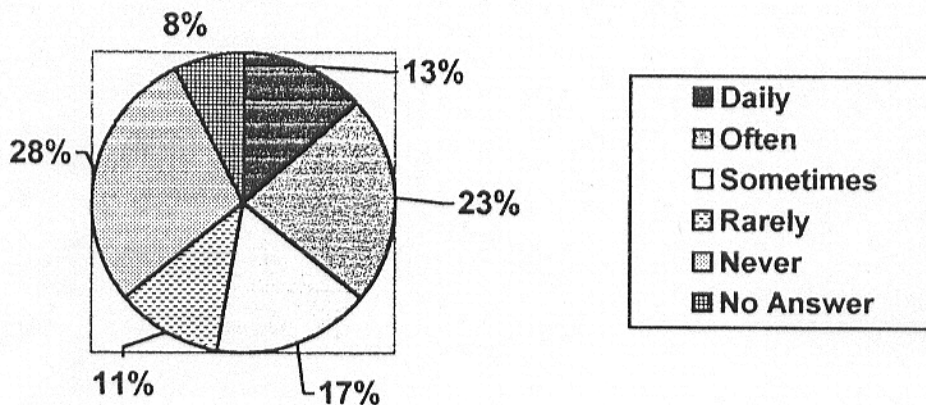
OTHER FINDINGS, continued

Quality of Life Issues

1. Compelled to change their routines:

64% of all Participants change their own routines sometime within a typical week due to the use of blowers. 56% of this group (36% of all Participants) do so often or daily due to gas fumes, dust, and/or noise.

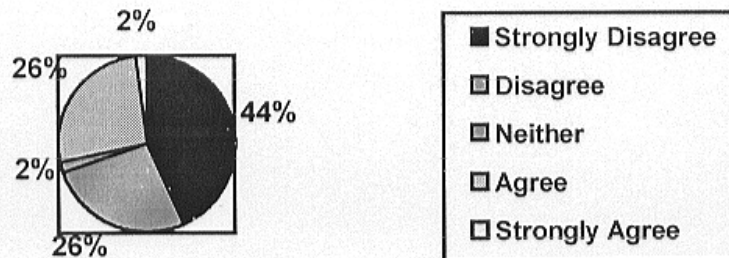
Forced to Change Daily Routines



These impacts and coping mechanisms include, but are not limited to changing locations in their yard or home, closing windows or doors, difficulty sleeping, studying, concentrating, or having conversations, turning up volume on electronic equipment.

70% of all Participants state that blowers in their neighborhood disturb them.

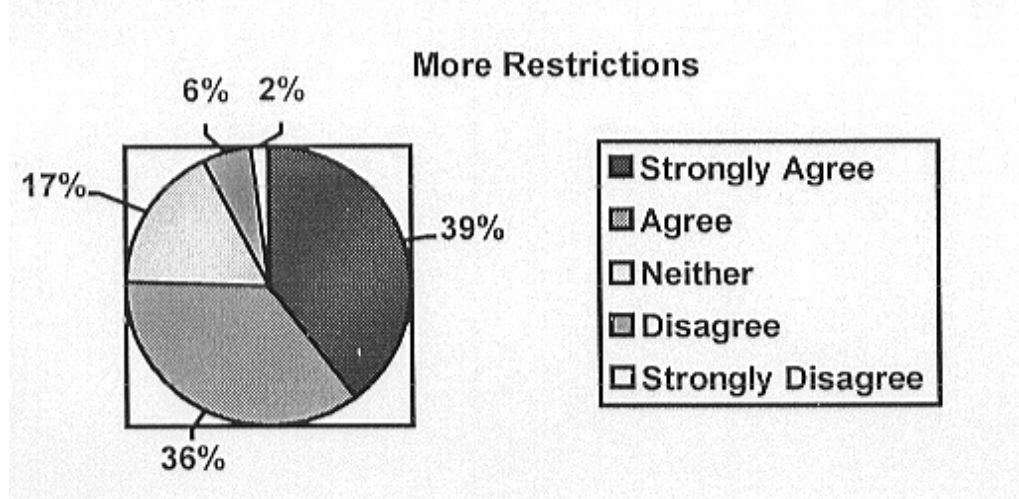
Blowers in My Neighborhood Do NOT Disturb Me



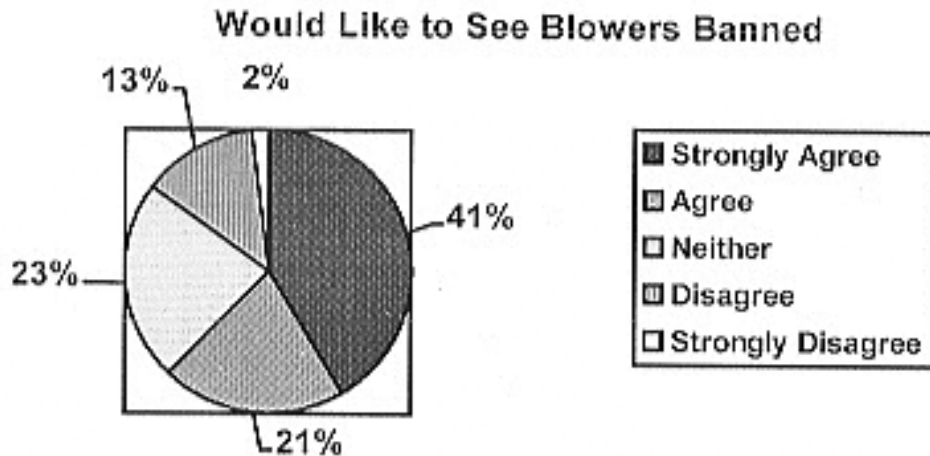
Findings Regarding Legislation

1. Support stronger legislation:

75% of Participants would like to see more restrictions on blowers.



62% of all Participants would like to see blowers banned.



2. Knowledge or lack thereof of existing legislation:

There was much confusion regarding the question "Are there any leaf blower restrictions legislated in your local area?" Many participants initially said, "I thought we did, but maybe we don't. They are still using blowers".

53% eventually decided there were local restrictions.

8% thought there were not, and

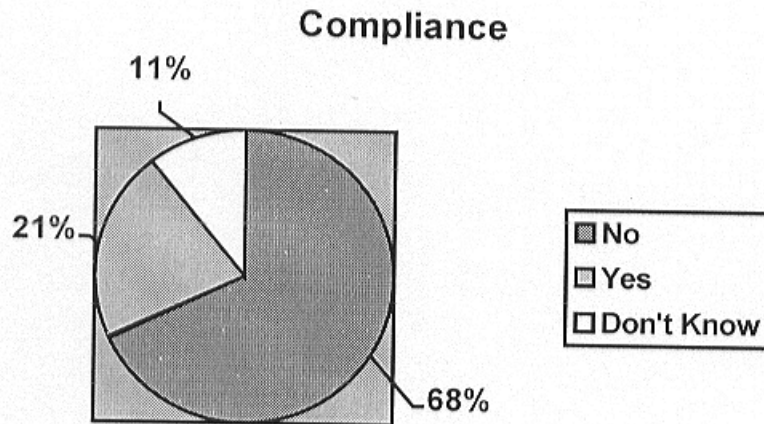
14% did not know.

OTHER FINDINGS, continued

3. Lack of Compliance with Blower Bans:

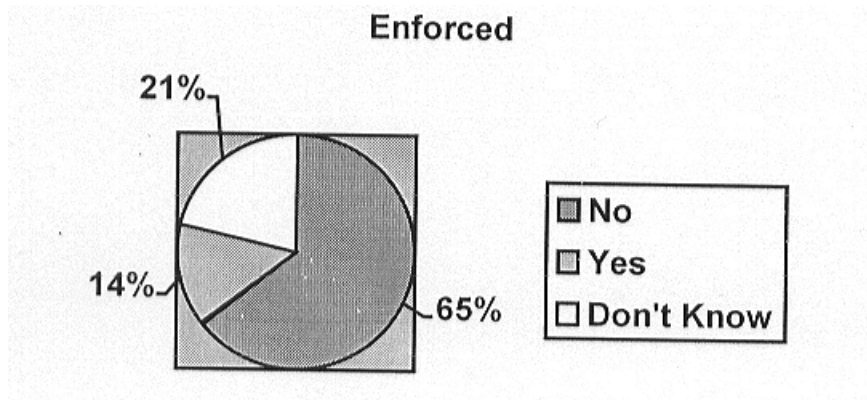
68% of Participants who believe there are blower restrictions legislated in their local area do not believe the regulations are being complied with.

Another 11% did not know.



4. Lack of Enforcement:

65% of Participants who believe there are blower restrictions legislated in their local area do not believe the regulations are being enforced. Another 21% did not know.



OTHER FINDINGS, continued

Findings Regarding Economics

Of the Participants who have blowers used at their residences,

86% stated they would be willing to discuss a pay adjustment with a worker who was willing to discontinue the use of blowers.

Comments were made by several Participants that they would like to discuss differences in work time, if any, on their property. Many Participants believe there may be no difference in time. Others indicated that there would be large differences.

CONCLUSIONS AND RECOMMENDATIONS

Lack of use of Protective Gear

Participants sometimes were unclear about the use of safety gear. They did not take into consideration the quality of available eye, ear and breathing protection. Protective gear was not explained so as not to influence answers. However, if the question, "Do scarves count?" was asked, participants were told "no". In an effort to be non-influential and to not bias answers, the Survey erred by being nonspecific in this area.

It is clear that blower operators and other members of the work crew are not using necessary protective health gear. Some blower manufacturers do recommend such gear in their operation manuals, in both English and Spanish. However, we believe that many of the actual operators never see these recommendations.

We were not surprised by lack of safety gear worn by other work crew members. Personal observations recorded soon after, followed by speaking with workers, themselves, to clarify what kind of eye, ear or face gear they are wearing would result in more accurate information.

Though claims are often made that there are no alternatives to blowers, this has been shown to be untrue. We have seen that blowers are primarily used by hired landscape workers. Perhaps it is because there are no alternatives which workers like as well as blowers. Most people who volunteered the information that they do their own gardening chores said they use methods other than blowers, we assume with success.

See Appendix for Alternatives to blowers.

Economics

It is clear that both employers and hired workers need to find a common ground in order to discuss landscape design, maintenance practices and pay rates as easily and reasonably as is the case with other business decisions. It appears that residential landscape workers are often paid the same rate many years without employers offering pay raises or adjusting workload by landscape changes or more frequent tree trimming. It also appears workers often assume their employers have a much higher standard for outdoor cleanliness than may actually be true, or necessary.

With one exception, employers did not offer pay raises. Generally, they were not asked for pay raises. Yet, three-fourths of employers said they would be willing to discuss pay adjustments—not assumed to be pay raises, but perhaps

adjustments in the workload. That should encourage gardeners and landscape workers to have discussions, with no need to make demands on employers, knowing they might reach an agreement on workload and pay.

Perhaps this will encourage workers to time the difference on each property when using blowers, and again with alternative methods such as vacuum, mulching mower or rake and broom, and discuss any difference in work time. This would be a good time to bring up the subject of regular pay raises, based on the cost of living or some other formula.

There were no surprises regarding the frequency of regular landscape maintenance - once a week; and the total amount of time appears to be about 45 minutes; and the use of blowers, where used, is from 5 to 30 minutes.

Nor were we surprised by the size of the work crew. The usual work crew of one or two workers (frequently the owner of a small business alone or with an assistant), has been supplanted in recent years in many localities/neighborhoods by a work crew of two to four, especially as large landscape companies are managing several crews.

Though the question of economics is not directly a health or environmental issue, concerns regarding the possibility of methods other than blowers taking more time do directly impact the worker's health if income is lowered and/or the workday is extended.

We believe that, where this might be the case, the additional time would be small on a daily basis, but add up over a month. Conversely, if blowers continue to be used because of the fear of economic problems, the health and environment of every resident and most workers are at risk. The health of landscape workers has an economic value. We believe worker health concerns greatly outweigh any possible timesaving from the use of blowers. Any economic differences can easily be ironed out between employer and worker - even if that means adjusting landscape design, accepting a less pristine final product, and/or decreasing the area assigned to be maintained by the worker instead of pay increases. Several chores or areas to be maintained might be alternated with others, each done bi-monthly, for example, instead of weekly.

It is only large blower manufacturers whose economics will be influenced, and only large blower manufacturers who can afford the wide scale publicity and public relations actions which have resulted in much press coverage and erroneous information. Their attempts to prohibit bans have taken an inordinate amount of taxpayer's monies, by demanding much time and energy from public officials. Attempts to prohibit bans have caused strife and distrust between groups that should be working together for the betterment of landscape workers and other California residents.

It is of great concern that many workers state they are afraid to speak to employers because they fear they will be fired. Perhaps employers, themselves, need to be encouraged to approach the workers on a yearly basis. Certainly, business education information and/or classes should be given to gardeners through their associations, or perhaps with a pamphlet put out by manufacturers or the Small Business Administration. These pamphlets should cover basic small business practices and how they relate to landscape maintenance businesses. The pamphlets should be offered free or low cost, and prominently displayed at blower retail distributors.

Opinions of Participants

In the past, it has been both stated and implied that grassroots organizations that promote blower bans were a select group, and that the majority of Hispanics would disagree with us. The experience of Survey taking was to the contrary. Hispanics also supported more restrictions and/or bans. California residents who agree come in a variety of ages, income levels and ethnic backgrounds.

The high incidence of participants who agreed or strongly agreed they would like more restrictions or more bans was surprising. But in light of the fact that more people are home when landscape maintenance is being done, it is understandable. While people in middle and working class neighborhoods have smaller lot sizes and may have two-income families, they may hire yard workers because they haven't the time to do the work themselves. We can assume that one family member might work in a "home-office" and/or outside of the traditional hours of 9am-5pm, and need to sleep or attempt to work at home during part of the day. If the lot sizes are small, they may be disturbed by blowers operated on many different surrounding properties, for up to 30 minutes each, perhaps on several different days of the week.

Just as nonsmokers in the 1950's put up with or made light of cigarette irritants, Participants were ambivalent about the extent to which they should respond to two questions. They would say, "Blowers in my neighborhood do not disturb me—just a little," then remember several things that had a negative impact on their quality of life. Or, "I don't change our routine because of blowers, except to close the windows."...One lower income Hispanic first said he did not want more restrictions, except, he "would like to not hear the noise so early" on the morning by blowers near his home. A young lifeguard who had concern for blower operators' livelihood also stated she had to alter her jogging route every day in an attempt to avoid blower noise and fumes.

It is hoped that Survey99, at a minimum, demonstrates the interest and concern about this issue among the general population.

ZAP recommends that further health studies specific to the use of blowers¹⁴ be performed so we can all be informed of the facts — and whether we should be more concerned, or less concerned about our health, as it is affected by blower use.

A minimum three-year moratorium on state legislation should be enacted to allow time for the completion of appropriate and necessary health studies on the impact from the use of gas-powered landscape equipment on the health of workers and residents alike.

¹⁴ See Appendix "Study Proposal Re Blowers Only"
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APPENDIX

I. A ZAP STUDY PROPOSAL RE BLOWERS DATED 5/2/99

STUDY PROPOSAL RE BLOWERS Only Version dated 5/2/99

Purpose of Study:

To determine the impact of use of leaf and debris blowers on the mental and physical health of the user, and other employees or persons working and living in the vicinity.

Where noise and air pollution from Particulate Matter ("PM") is being tested, it would be advantageous to include, as well, all devices whatsoever that operate on the principle of blowing leaves, grass clippings and related debris.

Study considerations:

1. All aspects of the use of each method should be considered, from the purchase of fuel, loading fuel, spillage and spillage fumes, preparing for use by starting and mounting the blower, including the time the blower is running compared to the time it is actually used, and maintenance.
2. Subjects will not be apprised of purposes of study.
3. Observations and monitoring of Workers using blowers in the "real world" without being aware they are being studied should be the basis for estimating how study results will impact care for residential properties, large and small.
4. Both those who oppose and those who promote use of leaf blowers should be equally represented on a Task Force and encouraged to give their feedback to a proposed study before it is carried out. These people will be sensitive to what has been left out of previous studies, which may render those studies inaccurate.

Terms and Definitions:

1. The all-inclusive term "Fuel" or "Power Source" should be used, and as many as possible fuels should be tested. Now these include gasoline, methanol, electricity.
2. "Worker" means anyone using a blower and may include those working with the user. This term may mean gardeners, homeowners, residents, or anyone else.
3. "Others" means anyone who is not a Worker as defined above who are seen or unseen by the Worker, who are inside, outside, or walking past who can smell or hear the device, or be subject to fumes and air pollution emissions, dust, particulate matter and other dislodged airborne debris caused by the use of the device..
4. "Hand Tools" means rakes, brooms, and other tools which do not require sources of power other than physical action.

Worker and Others: Because the subject of leaf blower vs other methods of debris and garden cleanup seriously affects Workers and Others, studies which are conducted to establish facts will only be valid if they take both groups into consideration. Factors

which seem to impact only the Worker or only the Others actually have an impact on both groups.

Distances: Distances from the source of air pollution and noise make a difference in mental and physical health, including factors such as fatigue, psychological mood. These factors, in turn, impact thinking, communication, and therefore, performance. Depending upon what you are studying, it may be more advantageous to be nearer or farther from the source. Taking a measurement at only one given distance is not helpful. Studies should monitor impact at several distances: Upon the Worker using the cleanup tool, anyone within 10 feet (since homes and open windows may be 5 feet from a work area), the 50 feet which has been established for noise monitoring purposes, and whatever the final distance might be before a cloud of dust might settle in a typical neighborhood on a breezy day to be at least 150 feet.

Other studies show the particulate matter as measured on a city-wide basis over a period of time. We need to know how people are impacted based on Workers using blowers in specific areas at specific times and for generally the same length of time, and usually on a regular weekly schedule.

In the planning stage, request opinion of the Lung Association and Asthma associations, to determine if this study might also address some of their concerns, as it is planned or with slight modifications or additional record keeping.

Conditions:

1. Study of PM and emissions should include their drift under various weather conditions and airflow.
2. Time on task, and therefore expenditure of fuel, should consider how long it takes to blow leaves and debris in dry areas vs wet areas, and off of hard, smooth or rough surfaces such as walkways and driveways, grass, and bedding areas; compacted dirt, loose dirt, gravel. Under normal operating conditions, how long the blower is actually running as compared to how long it is actually in use.
3. Differences between use in public use lands (schools, parks, golf clubs, shooting rangers, public building exteriors) and residential.
4. Compare blower use time for various chores: clean up of wet and dry paper, large debris, large and small leaves, wet and dry grass and leaves, pods, palm dates and dirt, small pebbles, dust.
5. Analyze contents of dust and particulate matter from various locations; e.g. near highways, highly fertilized, composted areas. What is going into the air from various settings. For instance, one residential neighborhood vs a public land use area.
6. Compare use techniques; i.e. leaves and debris blown straight ahead, or up against a curb, solid wall or fence with spacing between boards.
7. Compare emissions at various blower speeds, velocity and/or volume.
8. In addition to known respiratory problems associated with high Particulate Matter ("PM"), research existing studies and report on the dangers or lack of dangers of inhaling dried dog, bird and other animal feces, insecticides, oil and gasoline residue and other components of PM.

Power: Studies which compare various sources of energy (gasoline, electricity, and other fuels for machines, and physical activity for machines or water, rakes and brooms) should consider noise pollution, air pollution, ground pollution, and the physical affects upon Workers of using all methods.

Time: Time considerations should take into account all aspect of the use of blowers, as noted in page 1 "Study Considerations" #3 above.

Tools: Tools should be monitored as they are commonly used by both experienced and inexperienced Workers, since it must be assumed that recommendations from this study may be read, but not followed by all future users. The best tool for the job. Combining machine and physical activity.

Short and Long-term Health Considerations

Re: Workers:

1. Fuel emissions from an operating machine;
Spillage vapors when filling a tank.
2. Physical stress in starting, lifting, mounting, and wearing and using a blower;
3. Noise levels at normal use distance from Worker's ears
4. Particulate Matter height, time to settle, under various conditions, on various surfaces.
5. Physical activity necessitated by filling tank, starting, mounting and using and/or carrying the blower, removing and storing.
6. Mental stress regarding difficulty of use of various tools
7. Worker compliance with manufacturer health and safety recommendations and understanding of which type earplugs and masks will protect them.
8. Worker compliance with manufacturer recommendations regarding use distance from unprotected Workers and Others.

Re: Others:

Fuel emissions at a 10 ft. and 50 ft. distance, from operating machines.
Spillage runoff from filling a tank.
Fuel evaporation into air.
Sleep deprivation from noise specific to blowers
Noise levels at 10 feet and 50 feet.
Particulate Matter height, distance, girth at 10 feet and 50 feet under various conditions, on various surfaces. . Time to settle back to earth.
Physical activity and stress of having to move to quieter, healthier location and of washing cars and housecleaning more often.
Allergy susceptibility over a period of time, as people who have no allergies develop them due to having reached their tolerance point.
Physical cumulative symptoms of allergies and asthma and need for medications based on ambient high PM.
Fear and startle reactions, particularly in children and the elderly, caused by sudden loud noise.

Mental Health Considerations

Re: Workers:

Pride in work skills tied to Worker expectations, employer expectations.

Stress re judgments/opinions of self and others regarding use of power tools over hand tools.

Hesitation/fear of discussing with employer documented increased work-time caused by change in work tools, as it relates to increased compensation and/or decreased expectations or decreased workload.

Re: Others:

Results of sleep deprivation on work performance, coping levels, concentration of night shift workers, those suffering from illness, mothers of infants.

Mental and Physical impacts of the startle reaction.

Unacceptability of odors of fumes/emissions or noise may cause lack of concentration, anger, frustration.

Interrupted communications cause lack of focus.

Distractibility. i.e.: Stress re noise levels: 62 dB-87 dB at 20 feet is equal to a loud group address. 65 dB is acceptable sound level for working around business machines and half of people trying to sleep will experience difficulty. 70 dB causes people to have to shout at a distance of 6 feet and makes telephone conversation difficult. 75 dB is sound level of maintenance shops and garages and a raised voice is required for conversants two feet apart. 80dB makes it difficult to think clearly. May result in some stomach contraction and increase in metabolic rate. 85 dB Shouted communications are possible at three-four feet. Telephone use difficult. Some hearing loss occurs in range of 300-1200 Hz. some cognitive performance decrement can be expected, especially where decision making is necessary

Goals and Results: What are the goals of employers and Workers using various methods, and what are the final results? Do the results meet not only immediate, but long term goals.

A thorough study would use the above considerations to compared all leaf blowers, whatever their fuel, with all other methods of leaf and debris cleanup, i.e. vacuums, mulching mowers, rakes, brooms, water. However, a comprehensive study limited to gas and electric blowers can set benchmarks for comparison with future studies regarding traditional and combined clean up methods such as rakes, brooms and mulching mowers.

II. ALTERNATIVES TO BLOWER USE

The claim that there are no alternatives to leaf blowers is a serious issue for Legislators who have been told by opponents to blower bans that the difference in work time between using blowers and other methods would cause economic hardship for workers and small companies. Several sources quoted for this contention have proven to be weak or nonexistent. The only unbiased investigation known to ZAP was created and monitored by the Los Angeles City Department of Water and Power. There, the author of this Report, a grandmother, completed three timed tests faster with broom and/or rake than a professional gardener could start his gas blower and complete the same chores. Electric blowers were even slower. In one test, conducted next to a building, the blower blew damp pine needles and dirt what appeared to be over 20 feet into the air.

Survey99 indicates that leaves and debris are primarily gathered by methods other than blowers and that blowers are overwhelmingly used by hired workers.

88% of Participants stated there are alternatives to blowers. Some of those alternatives are noted here.

Broom and/or Rake

Brooms and rakes, as a unit, are a timeless method of landscape maintenance. Yet, some workers do not even bring a broom of their own to a job. These tools are inexpensive, lightweight, low maintenance, easy to store, and nonpolluting. Their sound levels are not harmful. They produce no danger from fuel spills or fingers scorched on hot engine surfaces. Used in various widths and strengths, and in combination, they clean grass, bedding areas and hardscape.

Rakes and brooms need no experience, no special skills and involve no danger in their use.

Speciality catalogues offer ergonomic rakes which diminish bending, thereby reducing fatigue and discomfort. Rakes work as well on wet leaves as dry, and move heavy pods, rocks and other debris faster than blowers.

Also available through catalogues or from janitorial supply businesses are rolling carts or large, long handled "dust bins" to diminish the need for bending when collecting leaves and debris with a rake or broom. One "Big Scoop" promoted for snow use could be used for this purpose.

Outdoor Vacuum

Electric leaf and/shop vacuums could be used, at a minimum, to pick up dust, dirt, light and/or small debris from the hardscape which Survey99 has shown are now cleaned with a blower. One blower/vacuum also mulches as it picks up leaves.¹⁵ A Fountain Valley landscape company President states that, after several days of testing a blower against a power vacuum, "the power vacuum was my first choice." It was 65% faster, cleaned 100% of the debris with no residue or dust remaining. He has seen damage to flowers in bedding caused by blowers, and dust blown into open windows, and onto vehicles. He observed damage done to vehicles by small stones and sand propelled by the blower.¹⁶

Vacuums: One outdoor vacuum¹⁷ has a 1.2 HP electric motor and claims to consume leaves, pine needles and lawn clippings with an impeller that mulches, a 20 inch wide "nozzle" and an 8-gallon collection bag (costs about \$170).

Sweeper

Sweepers are designed to be pushed, mower-style: One¹⁸ sweeps hardscape manually with two rotating circular brushes and claims to pick up leaves, paper, litter, or drink cans. Another sweeper claims to pick up leaves, litter, twigs and grass and deposit them in a 5 _ bushel catcher, and removes sand, dirt and rocks from driveways. It has a height adjustment and folds for storage (about \$150)¹⁹. Another "sweeper" cleans a 30" wide path and is purported to work on concrete, asphalt, and brick.

Mulching Mower

Mulching mowers come in electric models and have the advantage of not only picking up leaves and grass clippings at the same time, but of reducing 10 bags of yard waste into one. This is important for cities where landfills are filling up quickly and where green waste programs have not yet been implemented.

Water as a Part of Irrigation System Design

It is unfortunate in Southern California that so many Participants listed "water" as a way of gathering leaves and debris. This is usually accomplished with a standard hose on hardscape, and takes longer than any other method. I have observed a worker use water at full force to clean off dust, for over 30 minutes on the hardscape of one residence, alone, where the runoff was washed into the street and along the gutter.

¹⁵ Weed Eater

¹⁶ Triple Crown Landscape Company, Harmon D. Wilson.

¹⁷ The McCulloch Mac-Vac.

¹⁸ The "Boss Hog".

¹⁹ Brookstone Hard To Find Tools, 1800 926-7000.

Water takes longer than any other method of cleaning dust, dirt, leaves and debris.

If landscape is designed so that the path of runoff water leads to landscape that benefits from its irrigation, the following aids may make the job easier.

However, where water is used, the nozzle should contain a device to turn the water off and on and to cause the water to exit under high pressure.

High-powered "Water Brooms" claim to do a better job than normal hosing down in one-third the time with one-tenth the water. They roll on wheels and claim to triple the ordinary household water pressure with sturdy long handles which connect to a 32 inch cross-bar that contains 6 nozzles across its width.²⁰

Electric Landscape Tools

In the past, workers argued these machines would electrocute them if they used them near water or on rainy days.

The Electrical Test Lab of the Los Angeles City Department of Building and Safety suggests workers look for their approval label on electric machines. This means the machines of this type have been tested as safe for their designated use.

The Underwriters Laboratory suggests buyers be sure outdoor electric machines have their Underwriters Laboratory seal of approval (a large U L in a circle. A City of Los Angeles Electrical Test Lab seal is equivalent). All directions should be read and understood prior to using outdoor electrical appliances. If used according to these directions, and using common sense, workers cannot be electrocuted or get a shock. The lab tests conform to the American National Standards Institute (ANSI) guidelines and include electrical leakage tests to be sure no electricity can leak from the inner housing to the outside of the machine.

Many, if not all of machines manufactured for outdoor use have a cover ("shroud") around the plug so dampness cannot get to the prongs, which are recessed inside the machine. The cord may have a restraint to keep the plug safely recessed. And, outdoor receptacles are required to be GFI (Ground Fault Interrupt), which will stop deadly shocks. Extension cords may also have this feature. Homeowners can also easily replace nonconforming receptacles with GFI receptacles inside garages or homes.

²⁰ Sporty's Preferred Living, 1800 543-8633.
Report99

III. SPECIALTY CATALOGUES - HELPFUL ITEMS.²¹

1. Electric cord reels, outdoor electric power posts which "plant" into the ground at a location distant from, but connected to a source of electricity closer to a residence/
2. One device²² prevents accidental uncoupling of electrical cords by snapping around the connection,
3. Several inexpensive specialty rakes²³ claim to reduce back strain. One rake²⁴ encloses piles of leaves to facilitate lifting and depositing in a bin. It includes an ergonomic handle with cushioned grips. (Under \$30).
4. One manual rolling rake²⁵ is pushed ahead of its operator and rakes, de-thatches lawns, aerates the soil, and does light tilling.
5. Garden carts to transport gathered leaves and debris to a trash can or composting site on the property being cleaned.
6. There are many inexpensive devices that hold open trash bags at ground level which allow workers to rake or sweep leaves and debris directly into the bag without bending.

²¹ Sportys, 1800 543-8633.

Alsto's Handy Helpers, 1800 447-0048.

²² "Protect-a-Cord".

²³ "Back Saver" "Mongoose Rake/Landscaper Tough", True Temper Hardware's Snake Rake.

²⁴ "Garden Grabber".

²⁵ "Rako".

IV. WIDELY ACCEPTED LOCAL GOVERNMENT REGULATIONS

Local government has a long history of regulating private actions to provide for a more livable and safe society. The following are a few examples of these governmental regulations.

- Dogs must be on a leash.
- Owners must clean up after their dog.
- Billboards may be restricted and regulated.
- Smoking is prohibited in most facilities.
- Excessive noise from car radios, barking dogs and parties is prohibited.
- Dangerous fireworks are banned.
- Flammable brush must be cleared.
- Surfboarding is prohibited in swimming areas and vice-versa.
- Burning of leaves and/or yard waste is prohibited.
- Hours of operation of noise making activities are established.
- Building and zoning codes regulate use of property.
- Swimming pools must be fenced to protect children.
- Swimming pool spas must have two floor drains to reduce the possibility of an occupant being held under water by suction from a single drain.
- Sliding doors and certain large windows must be safety glass.
- Elevators and boilers must have safety inspections.
- Health practitioners must be licensed to work in certain areas.

V. LIST OF ZIP CODES REPRESENTED IN SURVEY99

Own	Rent
90002	90006
90008	90019
90024	90025
90049	90034
90066	90066
90068	90230
90077	90255
90210	90265
90266	90404
90272	91344
90290	91352
90291	91504
90402	91706
90405	91767
91204	94025
91331	
91342	
91351	
91356	
91401	
91423	
91436	
93535	
94043	