

Fat, Oil and Grease Public Engagement and Education Campaign

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Executive Summary

The city of Richmond has long been fighting with fat, oil, and grease (FOG), which is the major cause of sewer system clogging. The purpose of this study is to provide recommendations to City of Richmond on public engagement and public education towards reducing Fats, Oils and Grease in the municipal wastewater system. The recommendations are based on a literature review and the experience of other cities has dealt with this issue.

In order to achieve a significant reduction of FOG an education campaign must combine a media campaign that focuses on generating awareness and personal contact that emphasizes behaviour changes. A media campaign might include television, print, Internet websites, and online ads and search marketing. Community-based social marketing is one of the most suitable theories to fostering behaviour change. The types of tools that can be used in public outreach include commitment techniques, prompts, and effective messages. Based on the case study of Monterey County's media campaign and the Monterey Regional Water Pollution Control Agency (MRWPCA)'s public outreach, public presentations, exhibit, talk, and give-away items are good techniques to contact residents. A combination of mass media campaign and personal contact are recommended for Richmond to implement towards reducing FOG in municipal waste water system.

Background

Fat, oil and grease, also known as FOG, is a byproduct of cooking. It comes from meat, fats, lard, oil shortening, butter, margarine, food scraps, sauces, and dairy products. FOG is a problem to many cities' sewer systems. It can clog pipes and treatment screens, causing backups, overflows and odour problems. FOG that makes it through to the ocean can deplete

oxygen, damaging fish and other organisms that inhabit the environment. Also, it takes additional energy for treatment plants to break down excess FOG entering the system. The FOG battle in Richmond's sewer system has long been fought by the city. In 2010, a rule was introduced to require restaurants to install and maintain grease traps in the kitchens. Restaurants in Richmond have a high compliance rate with this bylaw. However, the FOG is still a big problem for Richmond's sewer system. The city spent \$ 870,000 to fix a main sewer at Lansdowne Road due to the completely blocked by FOG (Richmond News, 2010). Although there is a focus on controlling sources from commercial food outlets and management of controlled kitchen discharge, there is no plan on the control of sources on residential level.

It is important to educate residents to reduce FOG because residential FOG source represents a large part of all FOG entering the system. A few simple actions will prevent excess fats, oil and grease from clogging the sewer system or ending up in the ocean. For small amounts of grease, sauces and salad dressings use a paper towel to wipe off most of the oily residue before rinsing the kitchenware in the sink. For grease left over from cooking and frying, cool then down and pour it into a container. Then this container should be stored in the refrigerator or freezer until full, and then disposed in the household garbage. For large amounts of liquid cooking oil, store the oil in its original container and take it for recycling (Capital Regional District, 2009).

Literature review

Community-based social marketing is an effective approach to promoting behavioural change that is becoming increasingly recognized and adopted. It is an effective approach and is an attractive alternative to information-based campaigns. Community-based social marketing is

based upon research in the social sciences that demonstrates that behaviour change is most effectively achieved through initiatives delivered at the community level, which focus on removing barriers to an activity while simultaneously enhancing the activity's benefits. There are several types of tools that can be used in a strategy.

Commitment techniques are effective in promoting behaviours. People have a strong desire to be seen as consistent by others, individual deeds match their words are viewed as being honest and having integrity. For example, due to lawn watering, summer water use can rise 50% compared to other times of the year. Durham Region, Ontario, developed a community-based social marketing strategy. A proportion of residents were asked to sign commitments that they would water lawns only on odd or even days. Meanwhile, there are householders who were given "information only" with an information packet on efficient water use. The result shows that those householders who were asked to sign decreased watering by 54%, while those people received "information only" did not decreased watering (McKenzie- Mohr, 2000; P 47-60).

Prompts are another technique that is thought to be effective in community-based social marketing. Prompts can be very effective in encouraging repetitive behaviours, such as closing blinds. In order to reduce energy use in old buildings is to drop and tilt blinds when university staff left their offices at the end of the day to reduce heat loss during the winter. There are two simple methods to inform people in the offices to drop-and-tilt their blinds: a general written request from the university president, and by having the cleaning staff leave a reminder on the desk of faculty who forgot to drop-and tilt their blinds. These two simple methods increased

the percentage of faculty who adjusted their blinds from less than 10% to roughly two-thirds (ibid: P61-70).

Community-based social marketing emphasizes creating effective messages for an audience. Whether the contact is made personally or through the media, one of the more effective methods for increasing adoption of a sustainable behaviour is to model the behavior which other to adopt. Modelling involves demonstrating a desired behaviour. Modelling can be demonstrated in person or showed on television. For example, there are studies show that there are significant reductions in energy use in response to either a taped or live broadcast that demonstrated simple conservation methods and mentioned the financial benefits to be gained from carrying them out. The adoption of a new behaviour also can be fostered through social diffusion. Social diffusion frequently occurs as a result of friends, family members introducing us to them.

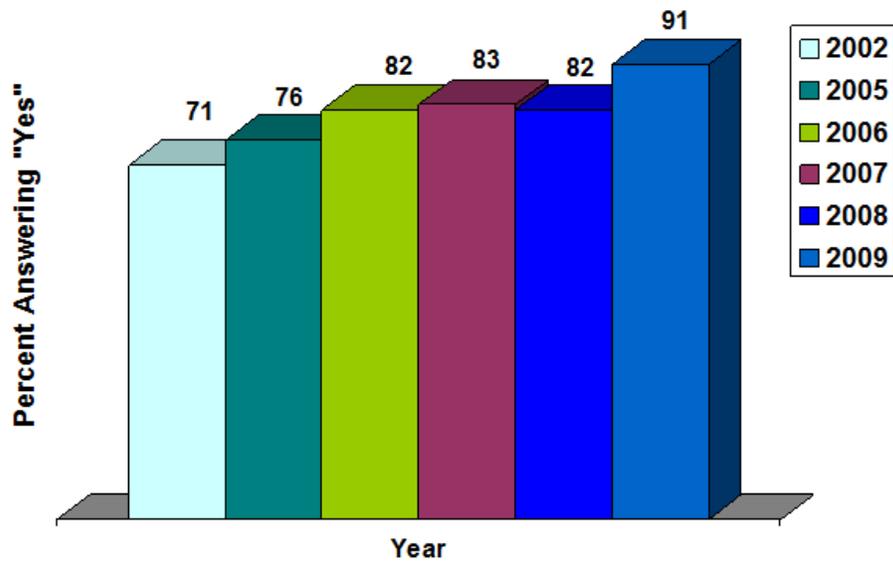
It is possible to harness commitment, modelling, and social diffusion by making use of community volunteers, or block leaders in order to have a significant impact on the adoption of sustainable behaviours. For example, there is a researcher arranged to have homes that were not recycling randomly divided into three groups: the first received a persuasive appeal delivered by a block leader, the second received a written persuasive appeal, and the third was a control group. The result is that an average of 28% of the homes visited by the block leader recycled weekly, compared with 12% for those who received only the written appeal, and only 3% for the control group (ibid: P96-99).

Self-efficacy, or perceived behavioural control is another important factor to address for successful FOG reduction behaviour change. Self-efficacy is influenced by two elements: facilitation conditions and self-assurance. Facilitation conditions refers to the availability of resources needed to perform the behaviour and can include factor such as time, money, and effort. In the case of FOG reduction, facilitating conditions can refer to availability of grease scrapers and FOG containers. Self-assurance refers to a person's perception on his or her ability to perform the behaviour successfully and the belief that successful performance of the behaviour will lead to successful outcomes (Taylor and Todd, P198). This theory suggests that making FOG reduction easy for residents, and emphasizing the positive effect from individual efforts, would be an important aspect of an effective FOG public outreach program. The research from Haldeman and Turner shows that the biggest influencers of sustained recycling behaviour were automatic distribution of the 32-gallon county recycling containers and the commitments people made. They argue that the initial spike of 68% increase in recycling weight is more likely due to the appearance of the 32-gallon containers and the interpersonal interaction between staff and residents during the implementation (Haldeman and Turner, P 124).

Case study: Monterey Region Grease Outreach

Monterey County, located on the Pacific coast of the U.S. state of California, has had success with its residential outreach program. It was developed as a group effort by 10 municipalities on the Central Coast of California to address the California State Waste Discharge Requirements (WDRs). Monterey County had a regional mass media campaign, began in 2003/2004 after the

WDR issuance. The total annual cost of the media campaign is \$ 15,000 per year. Some municipalities add more for additional advertising in their area. Some contract with the Monterey Regional Water Pollution Control Agency (MRWPCA), to provide other outreach services such as make door hangers, order grease scrapers, or coordinate a community program. The City of Pacific Grove was the first to implement public outreach due to litigation overspills to Monterey Bay. The public outreach program was successful. Pump stations pump out frequency was reduced from every 6 weeks to 10 weeks. Also, according to MRWPCA area surveys, awareness was increased from 63% to 91% since 2000. In addition, there are fewer beach closures in the region, which reduced from 10 times in 2002 to 0 time in 2004 (Harris's interview).



* Awareness that FOG is a leading cause of sewage spills; # of respondents: 514 (2002); 293 (2005); 382 (2006); 394 (2008); 400 (2009)

Figure 1. Monterey County Fair Customer Survey: Grease Blockage Awareness.

Source: Harris, 2009

The mass media campaign, called *Grease-Put a Lid on It!*, was developed by the Southern Monterey Bay Dischargers Group. Different media techniques are used in the campaign. These techniques include TV, Print, Internet, online ads and search marketing. TV is the most expensive media type, which is 47% of the total budget of 11/12 WDR grease public outreach plan. 204 ads are on KSBW TV and NBC Channel 8 and these ads last 4 months (Table 1). Online ads and search marketing is 28%. These ads can be found on KSBW Channel 8, Monterey County Herald, eLocalPlumbers.com and ThecityOf.com. Print ads are 15% of the total cost. Internet including ClogBuster.org and a Facebook page represents only 1%. Other expense such as program management and online postings are 9%. The proposed public outreach campaign time line is shown in table 2. Also, the campaign is maximized during the holidays when more residential blockages occur, when people are cooking during the holidays and when the sewer lines cool down. The cost of media campaign is shared by 10 partners; they are City of Salinas, Seaside County Sanitation District Marina Coast Water District, Marina Coast Water District, City of Monterey, City of Pacific Grove, Castroville Community Services District, California American Water, Pebble Beach Community Service District, Carmel Area Wastewater District, and County of Monterey. The cost is shared based on population served. The city of Salinas shares the largest amount of total budget \$15,000, which is \$ 7,913 based on its population of 150,441. Total cost is \$ 18,168 because Pebble Beach Community Service District and Carmel Area Wastewater District contribute \$ 3,168 for 16 extra ads in the Carmel Pine Cone to run biweekly through June 30, 2012.

Media Type	Budget Detail Summary
TV KSBW TV, Channel 8 (NBC)	(47%) 4 months, 204 ads*, 15 and 30 sec <small>(*total number of ads will be greater due to ABC affiliate simulcast ads during morning and evening news at no cost)</small>
Print La Ganga, Fri Carmel Pine Cone, Fri Monterey Herald Salinas Valley Weekly, Sat	(15%) 5 ads (1/8 page) 2 ads* (18 col. in., 1/5 pg) 6 ads (6 col. in., color) 10 ads (6 col. in., color)
Internet Website – ClogBusters.org and Facebook page Hosting, backups, archiving, 2 updates	(1%) 12 months www.ClogBusters.org
Online Ads & Search Marketing KSBW TV Channel 8 Monterey County Herald eLocalPlumbers.com TheCityOf.com	(28%) 4 months 50,000 impressions/mo 2 Months 50,000 impressions/mo 12 months, ads on Green page and Education page; ClogBlog postings up to 3-4/mo on Resources Page Large ad, 12 months
Staff/Misc. Program management; Facebook and ClogBlog postings	(9%)
Total Budget	\$15,000 Group

Table 1. WDR Grease Public Outreach Plan FY 11/12

Source: Monterey Regional Water Pollution Control Agency, 2011

Media Type	Nov '11	Dec '11	Jan '12	Feb '12	Mar '12	Apr '12	May '12	Jun '12
Television Commercials KSBW TV, 4 mo, 204 ads (NBC)	66 ads	46 ads	34 ads					58 ads
Newspapers La Ganga (F), 5 ads Mo. Herald, 6 ads Salinas Valley Wkly (Su), 10 ads Pine Cone (F), 18 ads	4-18- --20-23	-9-23- 4-11-18-22 4-11-18-25 -9-23-30	1-8- 6-20-	3-17-	2-16- -	6-20-	4-18-	--29 --24 1-15-29
Online Ads: KSBW.com 4 mo (50,000 imp) Herald.com 2 mo (50,000 imp)	all month all month	all month all month	all month					all month
Search Marketing: eLocalPlumbers.com, 1 yr TheCityOf.com, 1 yr	all month all month	all month all month	all month all month	all month all month	all month all month	all month all month	all month all month	Jun - Oct Jun - Oct
Website hosting www.ClogBusters.org	Jul - Nov	all month	all month	all month	all month	all month	all month	all month

Table 2: Proposed Public Outreach Campaign Time Line FY 11/12

Source: Monterey Regional Water Pollution Control Agency, 2011

TV commercial are 47% of the grease public outreach plan 11/12. It is the most important method in mass media campaign because TV is accessible to almost all residents. KSBW TV is chosen because it has highest audience rate in the region. Also, KSBW covers different group demographics especially Latino. Traditional print commercials can be found on Carmel Pine Cone, Monterey Herald, and Salinas Valley Weekly these three English-language newspapers. They also post advertising on Spanish-language newspaper, La Ganga since there is a large portion of Latino in the region. Online ads and search marketing is also important to mass media campaign since more and more people getting news online (Harris, 2009).

Online advertising and search marketing is the second most important media in the mass media campaign. Using web advertising enables people to get information about the number of visitors to a website and the number of page views. It helps gauge traffic and popularity trends which is useful for market research. Search marketing targets people who have clogged pipes. They choose eLocalPlumber.com to post FOG information because this website is the first ranked site on Google for a search for 'plumbers.' FOG information also posts on TheCityOf.com, where FOG information is post with sewer maintenance companies advertising. According to the web analytics, there are 670 page views for eLocalPlumbers.com in 2010 and there are 2,205 views in 8 months for TheCityOf.com (Harris, 2009; P 5-17).

The Monterey Regional Water Pollution Control Agency (MRWPCA) operates a wastewater treatment plant. It also offers many educational programs and resources through its Community Relations department. MRWPCA 10/11 outreach contact to residents in different forms such as schools visit, tours, and exhibits or talks. The school outreach program is a 60-

minute classroom presentation. The topics include the water cycle, the source of water, how to use water wisely, wastewater treatment, and pollution prevention. During the presentation, FOG information is given to the students. Each student receives a follow-up activity booklet entitled *My Watahbug Fun Book*. During 2010 and 2011, a total of 219 students were reached through school outreach program in Seaside Country Sanitation District (SCSD). In the past several years of public outreach, Pacific Grove program hold children's can decoration contest. Give-away items such as refrigerator magnets, grease scarpers, grease cans were available to some region of Monterey County.

The effectiveness of the public outreach program can be evaluated in two ways. One of the measurements is to conduct a survey. Exhibit surveys have been done in the past several years. In 2011, student surveys were conducted before and after school presentations at SCSD. The result shows that the awareness had increase from 59% to 72%. The other measurement is cooperating with different institutions. They learned from the sewer crews when the worse problem times were. Also, they obtained information from their pump station crews about the frequency to pump out grease from the pump stations. From these records they were able determine the effectiveness of the program. They are also working in tandem with their Source Control Inspection program for commercial and large food handling establishments such as restaurants and hotels. There is about 75% of grease from commercial sources, which can be regulated (Harris's interview).

Recommendations

A combination of a mass media campaign and personal contact are recommended for Richmond to implement towards reducing FOG. Media is a key measurement because of its ability to make the public aware of an issue and generate support for behaviour of change. Since Richmond's population to 2011 is estimated at 199,141, it is recommended that based on the population of Richmond, the cost of media campaign is approximately \$10,000, a similar amount that City of Salinas spends on their media campaign (City of Richmond). The mass media campaign should consist of a variety of media types including TV, traditional print Internet, and website, online ads, and search marketing.

In order to achieve significant reductions of residential FOG, an education campaign must go beyond the step of generating awareness into a realm that involves stimulating behavioural changes such as commitment techniques, prompts and effect message. The community can have volunteers or block leaders to ask residents to sign commitment and distribute information packages. It is recommended that a community-based social marketing approach be taken to advance the acceleration of behavioural change. School visits, exhibit, community presentation are recommended.

Conclusion

This study focuses on how City of Richmond could do on FOG reduction public education and public engagement. Based on the case study of Monterey County and MRWPCA's public outreach, achieving significant reduction of FOG an education campaign must combine media

campaign that focuses on generating awareness and personal contact that emphasizes behaviour changes.

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