

Education and Outreach



National Education and Outreach Programs (courtesy of Don't mess with Texas (left), Litterbug.org Pennsylvania (top), Don't Trash California (bottom), and Keep America Beautiful, Inc. (right)).

Summary

Education and outreach programs are designed to teach people about the impacts of littering or illegal dumping; and eventually, change their behavior. Programs usually include a mixture of anti-littering messages which are broadcast on television or radio, posted on billboards, and printed in newspapers or flyers. These programs are usually reinforced with the development of classroom curricula, storm drain signage, volunteer cleanups and toll-free telephone hotlines for reporting illegal dumping. Costs associated with these programs can be moderate to expensive. To effectively target audiences, program managers need to have a strong understanding of the behaviors and attitudes of litterers before developing an outreach program. Programs can change people's attitudes, but implementation needs to be consistent over time to maintain performance.

Description/Design

Education and outreach programs are designed to raise the awareness and concern of citizens about trash issues within their communities. Their goal is to change individual behaviors and reduce the amount of trash that is improperly disposed. Postings, signs, billboard, and television/radio advertisements discourage citizens from illicitly or negligently disposing of trash. There is usually a toll-free telephone number established so concerned and informed citizens may report trash-related issues. Education and outreach programs are often one component of more extensive public information and participation programs.

Many states and larger urban areas have anti-littering education programs. Improving community aesthetics is often the main goal of trash education and outreach programs, not necessarily reducing stormwater pollution. However, many government entities, including stormwater programs, have implemented

IC-3 Institutional Control

Education and Outreach Programs

- Don't Trash California
- Erase the Waste
- Keep America Beautiful
- Don't Mess with Texas
- Don't Be A Litterbug
- Washington State Department of Ecology

Implementation Point

- In Street
- Start of Pipe
- In Pipe
- End of Pipe
- In Creek
- Dispersed ✓

education programs to prevent trash from entering waterways. Because these programs aim to address the ultimate source of trash (human behavior), they are considered to be a core element of trash control efforts.

"This is by far the most crucial element of any litter reduction plan. It is a better investment to educate litterers out of their habit than to go around just picking up after them" (FCSHWM 1998).

Some examples within California include:

"Don't Trash California":

Don't Trash California was a statewide effort implemented by the California Department of Transportation (Caltrans) Storm Water Management Program. Its main goal was to reduce the amount of litter from entering highway storm drain systems. The campaign was based on Caltrans' successful three-year, public education pilot program completed within the Fresno metropolitan area in 2003.

The campaign used a comprehensive, multi-cultural approach which targeted primary offenders of highway littering and the general public. It strived to create communities in California that do not tolerate freeway and highway littering. The campaign, which was conducted in accordance with the National Pollution Discharge Elimination Systems (NPDES) permit requirements, used media advocacy, special events, partnerships, advertising, public service announcements and community outreach to raise the level of awareness of the effects of littering and encouraged the public to stop littering.

As part of its FY2005-2006 anti-littering outreach campaign, Caltrans developed television Public Service Announcements (PSAs) in English and Spanish. Many municipalities within Santa Clara County obtained copies of the PSAs for airing on their public access television stations. The following table includes the number of times the PSAs were aired in Santa Clara County cities.

Table 1. FY 2005-2006 Public Service Announcements airings in Santa Clara County.

Name of Community ¹	Name of TV Station	Area Served	Number of Airings
Palo Alto, East Palo, Atherton, Menlo Park, Stanford	The Media Center, Channels 27, 28, 30	Palo Alto, East Palo, Atherton, Menlo Park, Stanford	English - 223 Spanish - 86
City of Cupertino	The City Channel	Cupertino	English - 125
City of Santa Clara	City of Santa Clara, Channel 15	Santa Clara	English - 900
City of San Jose	Civic Center TV	San Jose	English - 25

'Erase the Waste' Campaign (Los Angeles):

In 2003, the State Water Resource Control Board started the "Erase the Waste" Campaign within the Los Angeles region. The two-year outreach campaign encouraged County of Los Angeles residents to take ownership of their communities; reduce stormwater pollution from the local landscape; and be part of the "pollution solution" by adopting simple, everyday actions. In addition to advertising, the Campaign includes media relations, partnerships (with retailers, corporations and nonprofit organizations), classroom and service learning projects and a "hands-on" community engagement campaign that enlists community stakeholders to bring pollution prevention information and activities into their neighborhoods (SWRCB 2006).

The Erase the Waste Campaign developed the California Storm Water Toolbox to help teach residents, community and civic groups, educators, municipalities and public agencies about the negative aspects of trash and how to prevent it from entering waterways. Strategies implemented to date include:

¹ Includes San Mateo County cities.

- Advertisements, posters, collateral materials and a comprehensive Neighborhood Action Kit in English, Spanish, Chinese, Korean and Vietnamese - a comprehensive "How-to" guide for community-focused pollution prevention;
- A landmark Water Quality Service Learning Model for grades 4-6 that meets the state's curriculum standards;
- The Water Quality Detectives After School Program, an adapted version of the curriculum for middle school and after school settings; and
- The California Storm Water Resource Directory, an on-line inventory of storm water materials developed in partnership with the California Storm Water Quality Association (www.swrcb.ca.gov/erasethewaste/).

Examples of other education and outreach programs/campaigns include:

- Keep America Beautiful, Inc. (www.kab.org) - A non-profit organization whose network of local, statewide and international affiliate programs educates individuals about litter prevention and ways to properly manage waste. In 1970, Keep America Beautiful released the "Crying Indian" PSA, which has been one of the most successful PSAs in history. The City of San Jose is a local Keep America Beautiful affiliate.
- Don't Mess with Texas (www.dontmesswithtexas.org) - An anti-highway litter campaign organized by the Texas Department of Transportation. In addition to creating anti-littering messages, this campaign collaborates with Texas Adopt-a-Highway and Keep Texas Beautiful.
- Don't Be a Litterbug (www.litterbug.org) - Anti-litter campaign developed by the Pennsylvania Resources Council (PRC). This campaign is known for its caricature of a litterbug with a fuzzy body and mischievous look. The caricature has been used by Keep America Beautiful, Inc. and the Pennsylvania Department of Environmental Protection in anti-littering campaigns.
- Keep it Clean! (www.savesfbay.org) - An education campaign developed by Save the Bay. This campaign was developed to educate residents about runoff flowing into San Francisco Bay. The goal of the campaign is to change behaviors which reduce pollutants from reaching the watershed and Bay.

Performance and/or Effectiveness

It is difficult to measure the impact of education and outreach programs on people's behavior and on trash loadings to waterways. Despite the widely acknowledged necessity of conducting these programs to achieve trash reduction goals, there is little quantitative information regarding how programs measure up to their stated goals. The most common method to evaluate performance is through telephone interviews before and after education campaigns. For example, to determine if its "Don't Mess with Texas" message was reaching Texans, the Texas Department of Transportation has conducted questionnaire-based studies. The 2005 study found that the percentage of people who could recall ads or public service announcements with anti-littering messages was 55%, a decrease from previous years (e.g., recall was 72% in 2003) (TxDOT 2005). The survey also found that in 2005, 71% of respondents could correctly identify the meaning of the "Don't Mess with Texas" slogan (TxDOT 2005). This slogan was most likely to be seen on television (51%) or on a billboard (42%) (TxDOT 2005). When respondents were asked if they would litter after hearing anti-littering messages, 89% said they would be unlikely and 94% said they would properly dispose of their litter. These results indicate that the "Don't Mess with Texas" message is reaching residents of Texas and potentially changing their behavior.

In California, several outreach campaigns have been conducted to educate residents about trash and its impacts on the environment and communities. Caltrans conducted a two year (2001 - 2003) pilot program to test its education and outreach program in Fresno (Caltrans 2003). To track the performance of the program, 830 residents (English and Spanish speakers) were interviewed just prior to the education campaign and interviewed again two years later (Caltrans 2003). The main goal of the evaluation was to understand whether the residents' knowledge and attitudes had been impacted by the education campaign. With English speakers,

there was a statistically significant increase in two areas: the number of people who thought litter was bad; and the number of people who recognized that cigarette butts are the most commonly littered item. With Spanish speakers, there was only a statistically significant increase in the number of people who thought litter was a major problem. At the end of two years, there was no statistically significant increase in the number of people who could identify the fines associated with littering. There was also no increase in the number of people who were aware that litter can end up in the storm drain system.

The State Water Resource Control Board's education and outreach program, "Erase the Waste", was successful in reaching a large number of people and showed signs of changing people's behaviors (Mays 2005). According to an August 2004 countywide assessment study on Los Angeles County polluting behaviors, ~one-third of Los Angeles County residents have changed at least one of their polluting behaviors in the past year and ~50 percent of residents have been more active in neighborhood cleanup activities in response to messages they have seen or heard (Mays 2005). The assessment also found that the message was reaching its target audiences - more than 70% of all Los Angeles County adults aged 25 to 54, and men 18 to 24, were reached through the campaign's multimedia advertising. Media coverage surrounding the campaign reached an approximate audience of 3.5 million.

There are, however, weaknesses with using questionnaires to evaluate program performance. The results of questionnaires may indicate that messages are reaching large numbers of people, but the behavior of people does not always match their responses. For example, an Australian study found that 78% people who had just been observed littering later claimed that littering was a "very important" or "extremely important" environmental issue (BIEC 1997 in Taylor and Wong 2002). Furthermore, very few outreach programs have quantified how behavioral or attitude changes have led to reductions in trash loadings to waterways. During the Caltrans pilot program in Fresno, an attempt was made to rigorously quantify whether the education program was reducing the amount of litter in the storm drain system. Monitoring nets were placed at outfalls and in catch basins in fourteen highway locations. Contents of the nets were regularly collected, dried and weighed. Data indicated that loadings to these sites actually increased over the study period. However, Caltrans found that factors like increases in traffic confounded the analysis. Furthermore, the statistical analysis showed that four to five years of post-program monitoring would be needed to properly evaluate the program's performance.

In the spring of 2002, Washington State Department of Ecology began a targeted advertising effort to reduce litter. This campaign built upon the results of a previous (1999) Litter Study. As a result of the 1999 study, a new slogan, "Litter and it will hurt", was aimed at the demographic group most likely to litter: males and young adults. The slogan appeared statewide on billboards, freeway signs and litterbags. Thirty-second television and radio spots were aired statewide during professional baseball games (WSDE 2005). One of the goals of the 2004 Study was to gauge the success of its advertising campaign and adapt future efforts, as needed.

The study found that between 1999 and 2004:

- The estimated amount of litter on roadways decreased from 8,322 tons to 6,315 tons; and,
- the estimated amount of litter on interchanges decreased from 617 tons to 443 tons in 2004 (WSDE 2005).

Overall litter generation on interchanges and on county roads exhibited a strong downward trend, but there was no statistically significant² decrease in litter generation on all roadways combined, or on roadways individually. Several components of litter showed statistically significant decreases on all roadways combined including:

² The observed differences in litter generation across all sites sampled in 1999 and 2004 were compared to the *expected increase* in litter generation from 1999 to 2004. The expected increase was based on Washington State Department of Transportation data showing a relative increase in miles driven in Washington from 1999 to 2004. To apply the tests, it was assumed that littering behavior (or litter generation per mile driven) remained unchanged since 1999. Therefore, there would be an increase in litter accumulation in 2004 due to the increase in miles driven. If the observed difference was less than the expected difference, it was possible that litter generation per mile driven in 2004 was less than in 1999. If the difference between the observed and expected litter generation was large enough (and the variability in observed differences between sites was small enough), the change was labeled as statistically significant.

- All beverage containers combined (43% reduction);
- Glass beverage containers (47% reduction);
- All alcoholic beverage containers combined (30% reduction); and
- Glass alcoholic beverage containers (30% reduction) (WSDE 2005).

Washington State Department of Ecology (WSDE) also established a litter hotline so citizens could report littering incidents they witness (e.g., people throwing litter from vehicles or litter being dispersed from an unsecured load). WSDE operates the litter hotline in cooperation with the Washington State Patrol and the Washington State Department of Licensing. It uses a caller's information to check the license plate number and car description with information in the Department of Licensing vehicle registration system. If the plate and description match, the Washington State Patrol sends the vehicle owner a letter notifying them of the incident and associated fines for littering (WSDE 2007). Every call received by the WSDE is processed. However, not every call results in a letter to the vehicle owner. Letters are not sent when the call was disconnected, the license plate number had no "match", the report was a duplicate or the vehicle was from out-of-state.

Since its inception in 2002, calls to the hotline have increased significantly, averaging 1200 calls a month (Warfield 2006). During one month, the hotline received 59,410 calls. These calls resulted in 45,307 letters being sent to the vehicle owner (Warfield 2006).

In June 2005, WSDE began inserting a postage-paid postcard survey with each hotline letter to track how litterers responded to getting the warning letter. As of April 2006, 683 postcard surveys had been returned (8-10% return rate). Thirty-three percent of respondents admitted to littering while 66% denied the behavior (Warfield 2006). The majority of respondents (68%) believe they are somewhat or very likely to get caught and fined, while only 30% of the general population held such beliefs. A very large majority of respondents (92%) said they would not likely to litter again.

The success of outreach also depends on the communication method used. When developing education and outreach programs, it is important to note that there is variability in how different media influences people. Taylor and Wong (2002) summarized citizens' responses on how the chosen communication method influenced their behavior with regards to watershed improvement education and outreach campaigns (Table 2). In

Table 2. Survey results on the relative performance of communication strategies (Various sources compiled by Taylor and Wong 2002).

COMMUNICATION METHODS RANKED BY DEGREE OF INFLUENCE							
US SURVEYS	MOST INFLUENCE					LEAST INFLUENCE	
Chesapeake Bay, Maryland and Virginia	TV	TV Ad	Newspaper Local Paper	Video	Brochure	Local Cable	Meeting
Washington	TV Ad	TV	Newspaper	Radio Ad	Brochure Radio News	Paper Ad	Billboard
Oregon	Direct Mail	TV Ad	Newspaper	Radio	TV	Bill Insert	Newsletter Local Paper
California	TV Ad	Stencils	Billboard	Local Paper	Brochure	Radio Ad	Bus Sign Direct Mail
California	TV	Newspaper	Radio	Magazine	Neighbors	School	Billboard brochure
Michigan	TV	Newspaper	Cable TV	Local Paper Newsletter	Video	Meeting	Brochure
Wisconsin	TV	Newspaper Newsletter	Brochure	Site Visit	Video	Meeting	-
Minnesota	Direct Mail	TV	Neighbors	Extension	Radio	Meeting	Local Cable TV

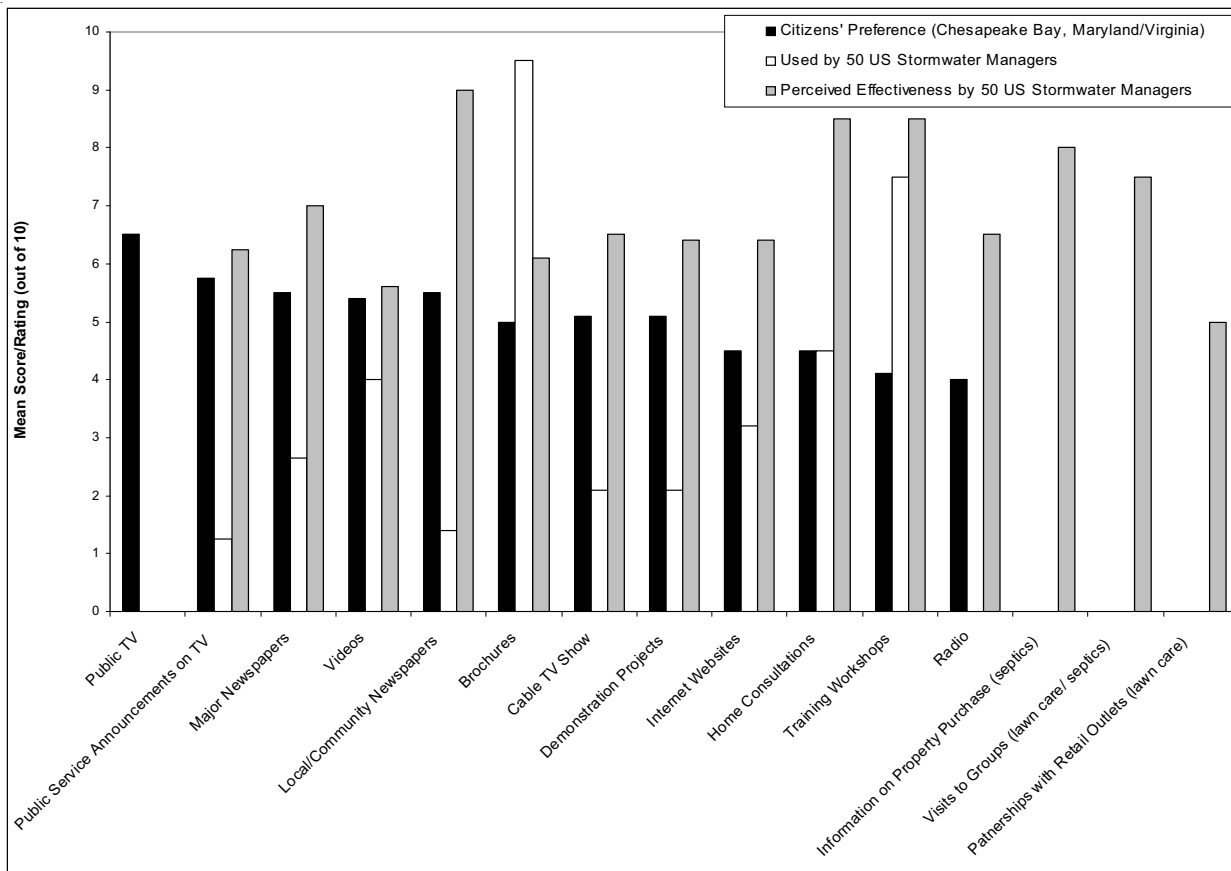


Figure 1. Communication methods used in US education and outreach campaigns for reducing nutrients in stormwater runoff from urban areas.

most cases, television was cited as having the most influence. Brochures and training workshops were the most widely used communication methods, but residents gave these methods a moderate to low rating (i.e. a score =5 out of 10) (Figure 1). Interestingly, stormwater managers choose methods of communication that they do not perceive to be the most effective. For example, public service announcements on television, major newspapers and community newsletters have a low degree of use by stormwater managers (i.e., a score < 3 out of 10) but are perceived by stormwater managers to be highly effectiveness (i.e., a score > 6 out of 10) (Taylor and Wong 2002). It is likely that high costs associated with some forms of communication prevent stormwater managers from using the most effective methods.

For outreach and education campaigns to be successful, there must be an understanding of the behaviors of people who do (or do not) litter (Groner 2007). This helps to focus efforts and target problem litterers more effectively (Groner 2007). In addition, education and outreach programs must be maintained. Some programs may take up to 15 years before they show measurable differences in behavior (NJCCC 2005). Any hard won gains made through an outreach program can be lost very quickly when programs are curtailed. For example, when the State of Washington cut funding to its outreach program, littering rates climbed, wiping out a third of the litter rate reduction that had been achieved (WSDE 2005). Since populations grow and change over time, programs need to be maintained, and regularly evaluated and adapted to maintain performance.

Costs

Education and outreach program costs and funding sources vary depending on the level of organization of the program (small, local volunteer efforts to multi-agency, state supported and staffed programs). Some programs rely

on contributions from individuals and corporate support, while others use funds generated through enforcement of regulations, fines or taxes. For example, WSDE's Community Litter Cleanup Program aids counties with the cost of picking up litter, cleaning up illegal dumps and providing anti-littering messages. This program is funded through taxes paid by grocery and drug stores, fast food restaurants, wholesale beverage companies and paper companies. WSDE's budget for 2007 until 2009 is \$2,604,000. Monies will be used for litter and illegal dump cleanup and education activities (WSDE 2006). The Department of Ecology's litter hotline costs ~\$65,000 a year (costs are based on 2006 call rate and include a contract with a call center, AT&T bills, postage, staff time and a small charge from Department of License to access their system) (Warfield 2006).

California's Erase the Waste Campaign had a budget of \$5 million. Approximately fifty percent of the budget was spent on advertising (SWRCB 2004). The Campaign was funded from California's Cleanup and Abatement Account (CAA), which derives funds from court judgments and administrative sanctions levied against corporate, government and industry polluters. By law, all CAA funds must be used for clean water purposes and are not taxpayer dollars (SWRCB 2004). An estimate of the total annual cost per capita of various advertising-based litter reduction programs range from \$0.35 to \$1.22 (NJCCC 2005).

Examples of other education and outreach budgets include:

- Don't Mess with Texas = Texas Department of Transportation's Litter Education budget originally \$2 million, reduced to \$1.5 million
- Don't Be a Litterbug (Pennsylvania) = \$600,000 annually, collected from a \$2 tipping fee at landfills and incinerators.
- Don't Waste Utah = Utah Department of Transportation's Litter Prevention campaign's typical annual budget:
 - Media = \$75,000
 - Public Relations = \$55,000
 - TV Production = \$45,000
 - Collateral Materials = \$10,000
 - Contingency = \$5,000
 - Total = \$190,000

Pros

There is some evidence that programs can prevent large quantities of trash from being deposited in waterways. They can raise citizens' awareness and understanding of how trash can enter storm drains and waterways. Education and outreach programs address the ultimate source of litter - individuals. They can also be a net cost benefit to government run litter control programs.

Cons

It is very difficult to measure the actual effect that programs have on people's behavior. Programs need a thorough understanding of the attitudes and behaviors of local audiences. Before a program can be designed and evaluated, a large marketing/social behavior study should be conducted. Programs need to be implemented for long periods before any effects are observed. They also need to be maintained since gains made will quickly be reversed. Performance is maximized when done in conjunction with other trash reduction efforts. Outreach programs are expensive.

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