
SAN JOSE HOUSEHOLD HAZARDOUS WASTE PUBLIC OUTREACH PROJECT EXECUTIVE SUMMARY

Prepared by: Aitran Doan and Adam Ellner

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Acknowledgements:

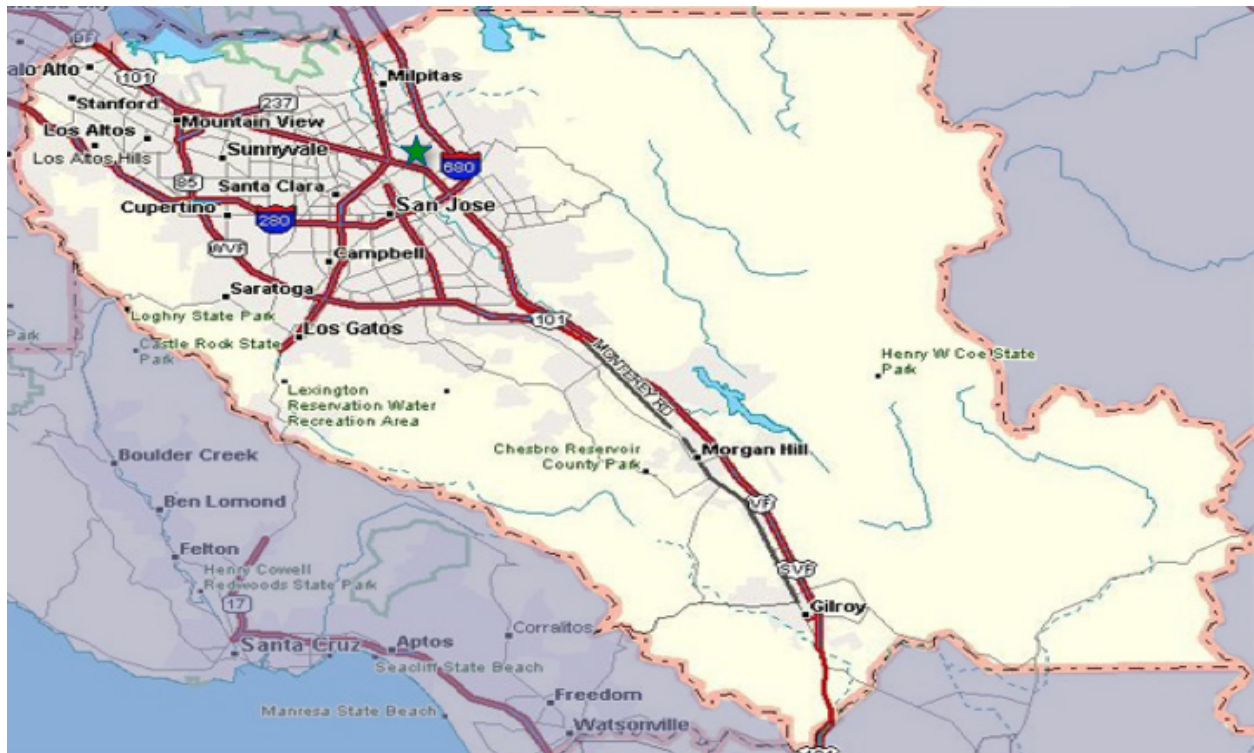
This project would not have been possible without the kind support of many individuals. We would like to express our sincerest gratitude to our Sustainable Cities professor Deland Chan and classmates, our community partners Lauren Romanazzi and Alana Rivaneyra at the City of San Jose, Ed Ramos and the San Jose Household Hazardous Waste Facility staff, the Stanford Geospatial Information Systems Library consultants David Medeiros and Yari Greaney.

San Jose Household Hazardous Waste (HHW) Program Public Engagement Strategy
Executive Summary of Project
Adam Ellner and Aitran Doan

Project Purpose:

With a population of 1,000,000 people, San Jose is the third largest city in California and the 10th largest city in the United States. As gentrification in Silicon Valley pushes evicted residents from nearby cities into San Jose where they are more accepted, the City is committed to providing a healthy living environment for its growing population by ensuring safe air, water, and soil quality. One of the ways the City of San Jose has committed to urban sustainability is by implementing initiatives to divert hazardous waste from entering the landfills. The successful execution of these waste management efforts holds significant social impact, because household hazardous waste that is poured down the drain or disposed of illegally through municipal trash collection has negative environmental impact. Toxic chemicals from hazardous waste that enter the storm sewers bypass wastewater treatment facilities and enter Bay Area waterways, and hazardous materials that are thrown in a landfill leach into the surrounding soil. Ultimately, without the regulation of HHW disposal, the housed and homeless populations of the City of San Jose and Santa Clara County face the risk of suffering from public health hazards posed by a contaminated natural environment.

In October 2013, the City of San Jose opened its Household Hazardous Waste Facility, which is managed by the Environmental Services Department. Statistics gathered from the County of Santa Clara show that during the facility's first fiscal year after opening (July 2013-June 2014), a total of 8,717 San Jose households made appointments to drop off their hazardous waste at the facility. The current goal of the City of San Jose is to increase participation to 11,000 households (a little under 4% of San Jose households). To contribute to the public outreach efforts, we--Stanford students Aitran Doan and Adam Ellner--worked under the mentorship of City of San Jose Integrated Waste Management team members, Lauren Romanazzi and Alana Rivadeneyra, to collect data on Santa Clara County residents' knowledge of household hazardous waste, create an interactive map of retail drop-off sites for HHW, and plant the seed for a potential local partnership for future outreach workshops and efforts.



= San Jose Household Hazardous Waste Facility

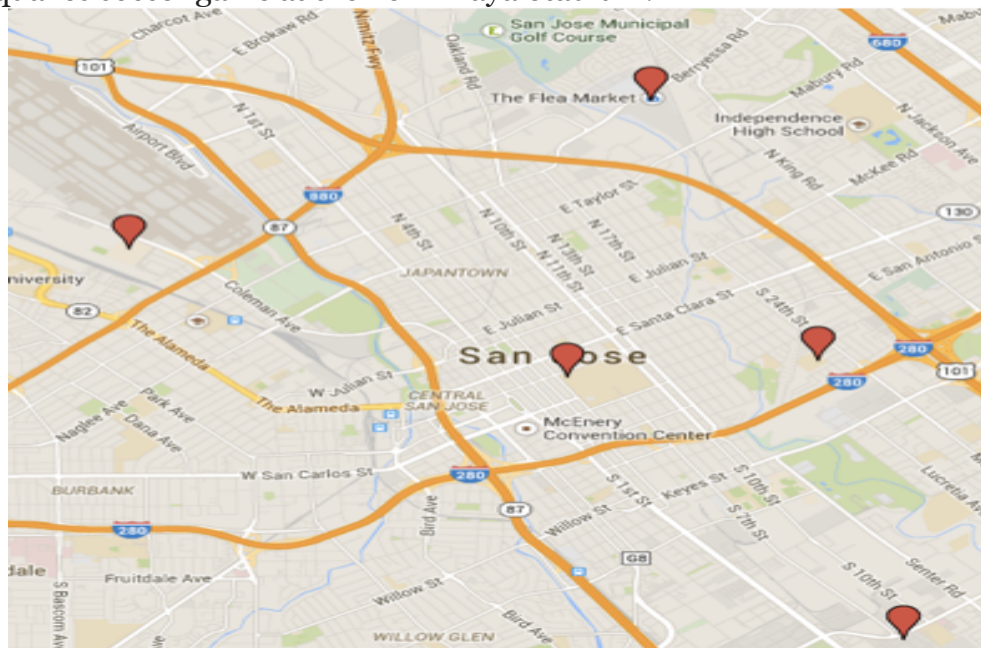
Case Study Review:

After our community partner informed us about its current outreach initiatives to increase HHW awareness, we started to explore strategies implemented by other cities. Since Seattle is one of the successful case studies, Adam contacted Richard Conlin, an ex-Seattle City Councilmember who participated in King's County's HHW program, to inquire about the specifics of Seattle's public outreach efforts. During the interview, Mr. Conlin advised that outreach efforts would be most effective if they are catered to certain demographics of the population that have the majority of the HHW. He also suggested that efforts such as a county-wide HHW roundup event and a mobile drop-off site can be effective in increasing participation. In addition, educational workshops targeted at children are necessary investments for future responsible citizens. We relayed these suggestions to our community partner.

Methodology:

During our first meeting with our community partner, they expressed the need for data to inform their outreach efforts. The two important questions they had were how many people knew about the new San Jose HHW Facility and whether or not people knew what items constitute HHW. To collect this data, we developed a survey and translated it into Chinese, Spanish, and Vietnamese so that we could get a sample representative of the diverse ethnic population of San Jose.

Our surveying strategy was going to public events that already attract large crowds of people. Given the racial breakdown of San Jose population is 27.6% white, 32.8% Asian, 33.2% Hispanic, 2.8% African American, and 3.6% other, we deliberately chose the following five places/events so our survey sample would correspond with the city's diverse demographics: the Martin Luther King Public Library, the San Jose Flea Market, a McKinley neighborhood meeting, the Vietnamese Tet Festival, and a San Jose Earthquakes soccer game at the new Avaya Stadium.



At these events, we approached potential survey participants, introduce ourselves, and summarize the purpose of our survey. We stressed the importance of Santa Clara County residents' input on the issue of HHW and emphasized that the local government values its citizens' feedback. We found that angling our purpose in this way made surveyors more inclined to participate in our survey. However, there were still a number of people who refuse to take the survey.

Household Hazardous Waste (HHW) Survey

1. Is there currently hazardous waste in your home?

Yes No Not Sure

Please list the items you have in your home:

2. How do you dispose of hazardous waste?

() Throw hazardous waste in regular trash.

() Throw hazardous waste in public trash facilities.

() Throw hazardous waste in other places. Please write down the locations:

3. Have you heard about the Household Hazardous Waste Program in San Jose?

Yes No

3.a Have you made a drop-off appointment before?

Yes No

3.b If no, please describe any barriers to dropping off household hazardous waste.

4. Which of these products are hazardous, and should not be disposed of in the trash? (Circle all that apply)



Household Cleaners



Cellphone



Paint



Fluorescent Light Bulbs



Motor oil



Batteries



Medications



Pesticides

5. What is your zip code?

6. What is your age group?

13-18 19-24 25-35 36-45 46-55 56-65 66-75 76+

Thank you for taking your time to answer this survey!

Translated Versions:

Vietnamese:

<https://docs.google.com/a/stanford.edu/document/d/173GsXwCbNnzbISaCq16i27bnjBmmSLOjshmAf2X5850/edit>

Spanish:

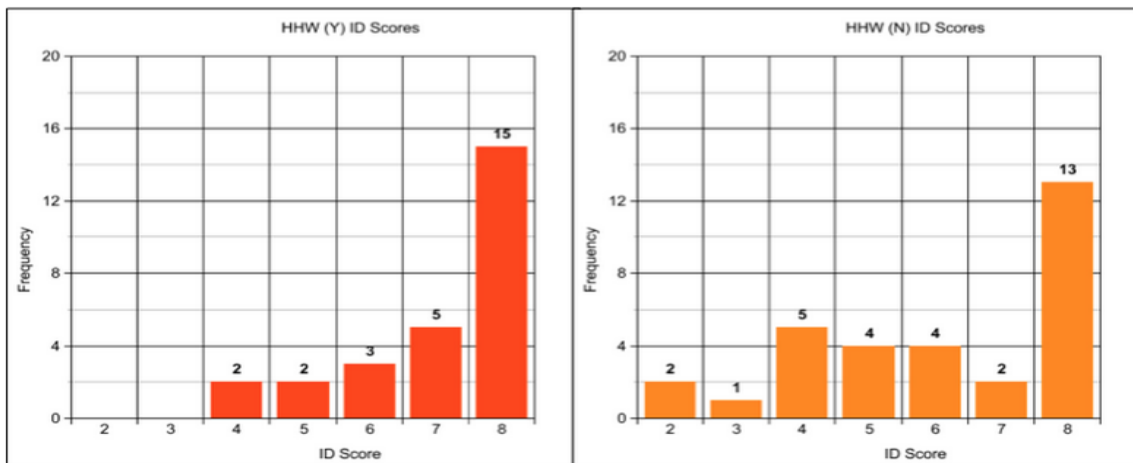
<https://docs.google.com/a/stanford.edu/document/d/173GsXwCbNnzbISaCq16i27bnjBmmSLOjshmAf2X5850/edit>

Chinese:

https://docs.google.com/a/stanford.edu/document/d/1KTzst-voKNZ7K3YAHSk9oH0aHLJOfQTlE5doAOf72gw/edit?usp=drive_web

Deliverables:

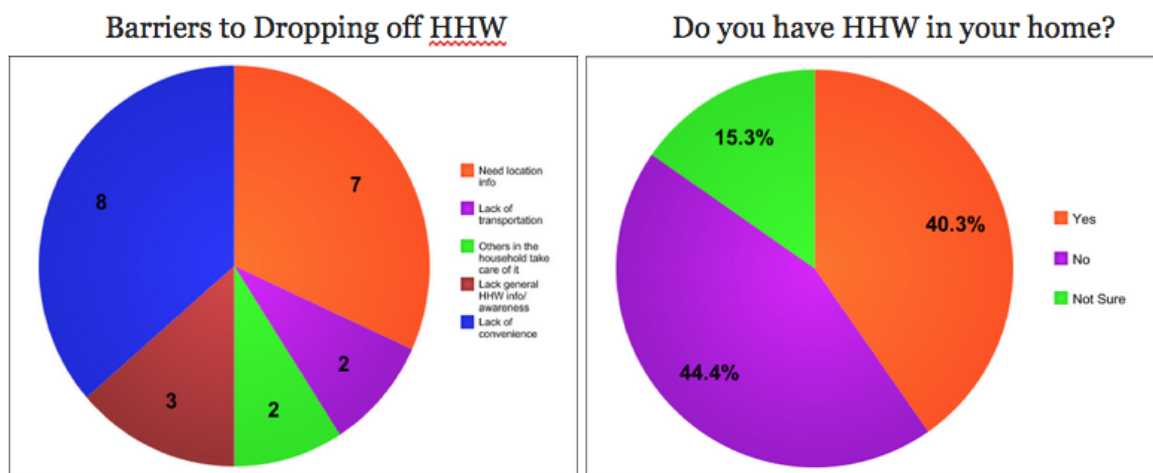
- I. Project Website: <http://sanjosehhw.weebly.com/>
- II. Survey Analysis:



N = 27 **Med = 8**
 $\sigma = 1.27$ **$\mu = 7.07$**

N = 31 **Med = 6**
 $\sigma = 1.96$ **$\mu = 6.10$**

We split the scores of the HHW ID test into two groups based on whether or not the subject said they had HHW in their home (Y or N) and compared the results. Those who answered yes were found on average to score higher on the ID test. Because one needs to recognize that they have HHW in their home before they will think to dispose of it separately, the ability to correctly identify HHW is key to getting more people to dispose of it correctly. Our data shows that the people who aren't identifying HHW in their homes are less likely to identify it in general, meaning that knowing what constitutes HHW is a significant issue that prevents more people from properly disposing of it.



The survey also highlighted that the main barriers to dropping off hazardous waste are inconvenience, lack of specific location information and lack of general awareness

about HHW. To address the first two problems, we created an ArcGIS map of retail drop-off sites in Santa Clara County and to address the third problem, we created a preliminary lesson plan for future educational workshops to be held at the San Jose Museum of Technology and several local schools.

III. ArcGIS Map:

This interactive map allows users to search for the nearest retail drop-off location that accepts the type of HHW that they want to dispose of. Highlighted features include applicable filters that specify nine types of HHW, an address search engine that zooms to any desired address, and an information box attached to each location that provides more information such as the phone number, website, hours, and address of that location.

<http://arcg.is/1xzzoEs>

IV. Lesson Plan:

We contacted local schools and the Tech Museum about the possibility of a future collaboration and drafted the following:

Lesson Plan for Household Hazardous Waste Workshop

Purpose: To engage students in conversations about household hazardous waste and the importance of its proper disposal.

Length of Time: ~20 minutes

Agenda:

1. Introduction by workshop leader(1 min)
2. Show RSA video from Santa Clara County:
<https://www.youtube.com/watch?v=8rUAgIrlAVw> and follow up with brief summary of the importance of correct waste disposal (3 minutes)
 - a. Harms the natural environment
 - b. Degrades water and soil quality
 - c. Decreases general quality of life and appearance of a city
3. Sorting game (10-15 mins)
 - a. Ask for volunteers to come up and try to correctly place one item.
 - b. Students must toss the item from X distance away from the board.
 - c. If they miss their intended hole, give them a second try.
 - d. If they guess incorrectly, explain what the right choice was and why disposing of it incorrectly would cause problems.
 - e. **Optional:** If the student correctly dispose of the waste, give them some type of reward(e.g. piece of candy/refrigerator magnet/pencil/waste ID guide)
 - f. Continue until every volunteer has gone. If interest is small, allow volunteers to go twice.

- g. Another way could be to have two games going simultaneously as a race to see which team could correctly put all of the items in the right places first, or who could sort the most correctly in an allotted time. Have team members take turns etc.
- 4. Closing (3 mins)
 - a. Mention the various HHW drop-off sites
 - i. San Jose HHW Facility and other Santa Clara County facilities
 - ii. Retail drop-off locations
 - b. Pass out fliers
 - c. Encourage the students to inform their parents and take the lead to correctly dispose of HHW.

Feedback about the workshops from participant should be collected in order to measure the impact of the workshops: are they fulfilling the objective of educating the general population, especially younger generations, about household hazardous waste and the importance of its correct disposal?

Next Steps:

Now that we have created this ArcGIS map, we hope that it can serve as a useful tool to help Santa Clara County residents find the most convenient location to drop off their household hazardous waste. Our contacts at the City of San Jose are working with the County to put the map onto the homepage of Santa Clara County's HHW website. We are forwarding our GIS data to the City so that they can maintain the map in the future when retail locations need to be added or deleted. As for our survey, it would be beneficial to get a larger sample to strengthen the accuracy of our conclusions. Therefore, we encourage the City of San Jose to continue implementing our survey and build upon the data we have collected. Lastly, our community partner has been in contact with the San Jose Tech Museum and local schools about implementing HHW workshops. Hopefully, our lesson plan will be of use for these future collaborations.

As a team, our main objective was to learn about creating tangible, positive impact in Stanford's surrounding communities. We hope that our efforts on this project helped contribute of the City of San Jose's Integrated Waste Management program. We thank our community partner at the City of San Jose and our Sustainable Cities class for the invaluable learning experience.