12-2018

Take Action Curriculum

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October 2018

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Safe Ag Safe Schools (SASS) is a coalition of 30-plus organizations, and individuals who work together to reduce pesticide exposure to Monterey County residents. Despite efforts to reduce pesticide use near schools, large amounts of drift-prone pesticides continue to be applied near our most vulnerable population. Our children are the ones who attend these schools and suffer the consequences. The Take Action curriculum was created to increase knowledge on pesticides while encouraging students to be civically engaged in their community. The Take Action Curriculum was taught at El Sausal Middle School to an 8th grade history class for 4 days. The outcome of the project showed an increase in knowledge, and the students learning experience demonstrated the need for the curriculum. The recommendation is for the agency to develop a general curriculum based off the Take Action Curriculum to be used at more schools who are vulnerable to pesticide exposure in the Monterey County.

Keywords: drift-prone, pesticides, civic engagement, civically engaged, vulnerable populations

Safe Ag Safe Schools

SAfe Ag Safe Schools (SASS) is a coalition of 30-plus organizations, and individuals who work together to reduce pesticide exposure to Monterey County residents. The focus of SASS is to keep school children safe from hazardous pesticides that can cause harm such as asthma and developmental delays. The group was originally developed in response to a proposal to approve the carcinogenic fumigant pesticide Methyl Iodide on agricultural fields in California.With a vision to inform and mobilize the people in the Monterey Bay region to make change, and together help keep children from being exposed to pesticides. Located on the east side of Salinas, SASS shares it's office with the California Rural Legal Assistance (CRLA) and collaborates with Building Healthy Communities (BHC).

Currently, SASS is focused on increasing grassroot pressure on government decision makers to phase out hazardous drift-prone pesticides, and taking action to reduce hazardous pesticide use near schools and residential communities in the Monterey County. SASS has branches that currently meet in Salinas, Watsonville, and Greenfield, and members work on a voluntary basis. The agency serves marginalized populations, children, field workers, and all those affected by pesticides in the Monterey Bay region. The organization has close relationships with the CRLA, BHC, school districts, teachers, nurses, and many people passionate about the cause. SASS has been working effortlessly this past year to get the Monterey Ag Commissioner to discuss setting stricter regulations on school buffer zones, with little success thus far.

Prevalent Pesticide Problem

The fact that Salinas has a high agriculture population and applies pesticides so close to schools is a problem. Despite efforts to reduce pesticide use near schools, large amounts of drift-prone pesticides continue to be applied near one of our most vulnerable populations. Residents and students in the Salinas area may not be aware of pesticide exposure, nor the effects it has on their health. According to the Department of Public Health (DPH) report conducted in 2014, "Monterey County has the highest percentage (25%) of students in the state that attend school within ¼ mile of the heaviest pesticide use" (Bradman & Spear, 2014). In this report 15 counties were studied to determine pesticide exposure near California schools, and the report also concluded, "Of the 15 agricultural counties studied, Latino school children were nearly twice (91%) as likely to attend a school near the heaviest pesticide use as their white peers" (Bradman & Spear, 2014).

Without proper notification to parents and teachers, they are unable to make any decisions regarding whether it is safe to attend school after a pesticide spray. Many parents are not even aware ,or informed when the application occurs making it difficult to protect their children. Until recently a new regulation became effective January 1st, 2018, "This regulation prohibits certain pesticide applications within specified distances of a school site and requires annual notification to those school sites" as stated in the regulation (GCAC, 2018). This is just the first step to protecting our children from pesticides, but alone is not enough to prevent the effects. Pesticides will continue to be applied as long as conventional farming is in business, therefore taking preventative measures now is necessary.

One contributing factor without a doubt is the "drift" exposure that stays in the air for up to weeks, and sometimes drifts miles from the fields depending on the pesticide. If pesticides stayed in the field they were sprayed, then children in schools wouldn't have to worry about the after effects. Currently, "36% of California's public schools have agricultural pesticides applied within a quarter mile" (Sellen, 2017). Due to pesticides being sprayed so close to schools, they can linger for long periods of time. "The problems facing school children is that many of the pesticides applied near schools are known to drift during and after applications—sometimes up to weeks afterwards" (Towers & Brieger, 2014). Drift exposure is just as bad as the initial spray, and because of this air monitors have been put in schools around California to capture the amount of pesticides in the air. As of 2017, there are 8 air monitors measuring fumigant, and OP air concentrations. According to the California Department of Pesticide Regulation database, "The air monitor at the Salinas airport (over ¼ mile away from fields) found concentrations of neurotoxic chlorpyrifos at 3 times the EPA's health risk level" (Fadipe, 2017).

Another factor is Salinas being a major agricultural city, with California alone accounting for 21 percent of all agricultural pesticides used in the country. Salinas is considered one of the major cities with agriculture production, and according to the Pesticide Use Report (PUR) "Several epidemiologic studies found that higher nearby agricultural pesticide use was associated with poorer health outcomes of children"(Gunter, 2017). Studies have supported this theory for years, and research has proved the dangers of pesticides on humans. Lastly, the lack of policy and regulations set among the agricultural industries are not up to standard. According to Paul

Towers, “Salinas Ca, a major pesticide drift incident that sent 18 farmworkers to the hospital illustrates the need for new rules that provide more stringent notification policies and stronger protections for fieldworkers and neighboring communities”(Towers, 2017).

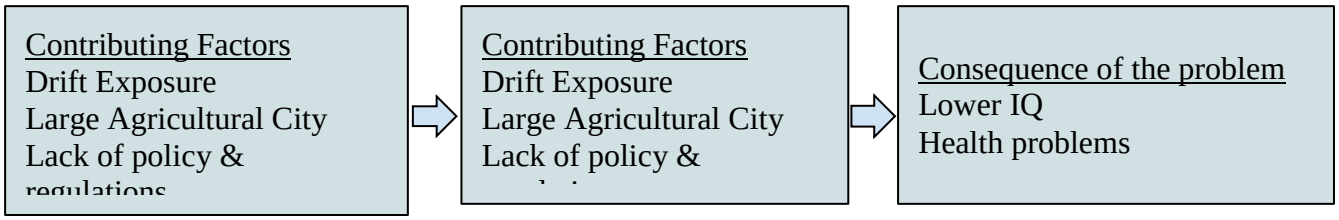
There has been a lot of media in 2017 and 2018 surrounding pesticide use, and after the EPA requested scientific evidence stating they are harmful to humans before they ban Chlorpyrifos there is much more to be done. The issues of lack of policy and large agricultural city are closely related because this ultimately creates a high demand for food, and the need for fast production. Cesar Lara, Executive Director of the Monterey Bay Central Labor Council stated in an article, “There is a need for greater protections for farmworkers and rural communities, county and state officials should adopt health-protective, no-spray buffer zones around and help growers transition to safer pest control methods”(Towers, 2017). Yet, despite the need for stronger regulations in place, nothing effective is being done.

The consequences of pesticide exposure are substantial with children having lower IQ’s, and chronic health problems. Due to the amounts of pesticides used in Salinas, children attending schools next to fields have been shown to have lower IQ’s. The ongoing exposure to these pesticides can lead to cancer, and developmental problems. There are also acute health issues such as rash, eye itchiness, throat pain, chest pain, nausea, and in some cases diarrhea. In a press release, Nayamin Martinez, Executive Director of the Central California Environmental Justice Network stated, “The ten most heavily used pesticides near schools are all associated with at least one severe impact on children’s health, and learning. These students suffer long-term

chronic exposure throughout their childhood to chemicals known to cause cancer, and other severe health impacts" (Martinez, 2017).

Take Action Curriculum

The title of the project is Take Action Curriculum, which will be a 6 day lesson plan that will emphasize pesticide awareness along with encouraging different forms of civic engagement. The lesson plan will serve as an introduction to the history of pesticide use, and California's response to the health threats pesticides pose. The curriculum will utilize the student's prior knowledge of California history, and encourages them to engage in the study of pesticides as they affect public health and social justice. Students will also explore the differences between the five freedoms in the first amendment, the work done by Cesar Chavez with pesticides, and the history behind Rachel Carson whose efforts to ban pesticide use started the movement. The purpose of the curriculum is to make youth aware of how pesticides affect our community and ways to be civically engaged, which will help them build leadership and verbal communication skills.



This project is educational, with a goal to increase pesticide awareness while teaching civic engagement. The population to be served will be 8th grade students from El Sausal Middle

School in east Salinas. The curriculum will address the lack of awareness and need for civic engagement in the community. There is a correlation between exposure to pesticides, and developmental issues among children and a curriculum can help address the issue. In the Chamacos of Salinas Evaluating Chemicals in Homes & Agriculture (COSECHA) study, Dr. Brenda Eskenazi found "Young children exposed to organophosphates (OPs) were more likely to have attention problems, and higher risk of respiratory problems, and pregnant mothers living near OP use had children with lower IQs" (Barone, 2017).

With prevention and education there is a greater chance of preventing the issue and reducing these statistics. The curriculum will do wonders for the unrepresented, the unaware, the ones who have family members who are out in the fields everyday. For the parents who sacrifice their health in order to provide a roof over their families head, and the ones who not only need to be informed but deserve to be. SASS will be able to use the curriculum as a stepping stool to make sure it is not just taught in one grade, but can be taught to many grades. This will be an opportunity to spread their positive impact on the Salinas community in a large scale, by providing the necessary information to the growing population.

Project Implementation

To implement the curriculum there have been many steps necessary to achieving the desired outcome. The project manager started by selecting a school that was in Salinas, and also close proximity to fields so that a teacher would be more inclined to participate in the project. After discussing possible grades with the mentor, the project manager was able to start the actual curriculum outline by researching and made an outline of what it was going to look like. The

most difficult task was getting a teacher on board, and this took longer than anticipated. The next step after the teacher agreed to participate was to establish the grade taught and subject in order to tie the curriculum into a subject that fits with pesticide history. After the teacher was selected it was very important to meet with the teacher and discuss what components should be added based on the materials already being taught, and the level of activities to be added.

Another important factor was adding the core standards for California, to ensure the curriculum meets them. Then there is implementing the curriculum, and adding personal touches based on what is going on today with pesticides and civic engagement and incorporating that. Lastly, the components of the curriculum itself such as: finalizing the pre and post survey questions, implement it, and collect the surveys to analyze the data are what is needed. The content in the curriculum has continued to change with details such as time frames for each day, activities, and the days to be taught. Recently the project manager met with the teacher who will be absent for 2 of the days, and informed the project manager that the curriculum is too long and needs to be condensed. Ultimately the curriculum is going to take longer than anticipated and will be from October the 10th to October 18th. The teacher will have the four day curriculum spread throughout a two week period with one activity per day instead of two. The lesson plan includes articles, databases, and journals so the project manager has to ensure it is suitable material for the students. The program manager will also need to print out the assignments for the activities, and practice going over the curriculum since they will be teaching the curriculum with the teacher.

Scope of Work

See in Appendix A for a detailed table of dates along with activities completed.

Curriculum Results

The projected outcome is to increase knowledge around pesticide history, and show the students ways to be civically engaged in their community. An outcome measure is the data collected from the pre and post surveys, as well as the attendance sheet that will be collected for all the days the curriculum is taught. The pre and post survey questions are a little different so that the students do not memorize their answers, but instead reflects what they learned after (see Appendix B for pre and post survey questions). Having the survey questions only be multiple choice and true or false will allow for better results because it allows them to pick the best option. These will be good indicators of their presence and knowledge. The method used to gather evidence is pre and post surveys because this will establish a baseline for what they currently know, and compare it to the post survey to see what knowledge they have gained. Hopefully the curriculum can open their eyes to opportunities to connect with their community, and see how important it is to be informed about the issues that affect us. In this day of age, youth is shaping our world and taking the stand for what they believe in. If the curriculum can reach just a couple of students, or spark more interest among them to participate in their community, then the curriculum made an impact.

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APPENDIX A

Activities	**Deliverables**	**Timeline**	**Est. Completion Date**
Decide on length of curriculum	4 day curriculum	February 1st-March 16	March 5th
Select grade	8th grade class	March 1st-March 16th	March 10
Select the subject	History class	April 5-20th	April 7th
Research curriculum examples	Outline	April 10th-29th	April 15th
Research material	Worksheets	May 12th-May 15th	May 15th
Print out instructions	Instructions	May 12th-May 15th	May 11th
Have teacher selected	Teacher	ASAP	June 1st
Have teacher approve	Curriculum	May 20th-June 1st	June 15th
Finalize curriculum detail	Timeline	June 1st-June 15th	June 15th
Work on pre/post survey	Surveys	June 1st-June 15th	June 9th
Apply for grant	Money for trip	May 9th-June 15th	May 20th
Plan details for field trip	Activities	May 15th-June 10th	May 21st
Include the timeframe	Curriculum	May 7th- May 20th	August 25th
Finalize the field trip	Field Trip	June 1st- June 15th	August 24
Add in core standards	Standards	June 20th-August 1st	September 5th

Teach the curriculum	Knowledge	October 11th-18th	October 12th
Post survey test	Data	October 18th	October 25th
Feedback from teacher	Feedback	October 20th	October 25th
Analyze the surveys	Data	November 1st-15th	November 25th
Capstone Festival	Graduation	December 20-22nd	December 21st

APPENDIX B

Pre Survey Questions

1. Why are pesticides use?
2. Some differences of organic farming and conventional farming?
3. Two ways to be civically engaged include all of the following except?
4. Pesticide drift is when pesticides are applied directly to the soil?
5. Cesar Chavez and Dolores Huerta were farmworker rights advocates?

Post Survey Questions

1. Why pesticides used?
2. Some differences of organic farming and conventional farming?
3. Two ways to be civically engaged include all of the following except?
4. Pesticide drift is when pesticides are applied directly to the soil?
5. Was this lesson plan helpful to you to understand more about pesticides?
6. Do you think there is more that can be done?