



Aplicar métodos sanos
(Apply Healthy Solutions)

Iluminar al público
(Educate our Community)

Respitar aire limpio
(Breathe Clean Air)

Erradicar contaminantes
(Reduce Contaminants)

2018-2019 Environmental Sustainability Team
Indoor Pollution Educational Project

Valerie Chávez, MD
Antonio Luján
Vanessa Santamaría Dainton
Alex Villa
Melanie Zamora

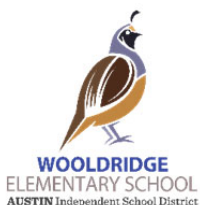




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EXECUTIVE SUMMARY

The majority of air pollution attention deals with the outdoor kind. However, with indoor pollution exposures being 2-5 times higher than outdoors, based on data from the U.S. Environmental Protection Agency, INDOOR air pollution is more of an environmental concern. Children of lower socioeconomic status, especially Latinos, are disproportionately affected.

To empower our youth, we developed an educational program for 2nd through 5th graders at schools with high Latino student populations. 164 students in 10 classes at Ridgetop and Woolridge Elementary Schools were taught an indoor air pollution Texas Essential Knowledge and Skills based curriculum. They learned about the different indoor air pollution contributors and ways to reduce their risks in school and at home through easy and cost-effective means. Learning was measured with post-training surveys.

For further educational emphasis, they were given coloring books (with the same indoor pollution lessons) and crayons to take home. They were also encouraged to participate in the Take Care of Texas Kids Art Contest through the Texas Commission on Environmental Quality. Additionally, they were provided letters to take home to their parents which explained the lessons taught and encouraged parents to also become part of the indoor pollution solution.

For their participation, educators were gifted a kit with green cleaning supplies, an aloe vera plant, and printed lesson plans for the teaching of future classes.

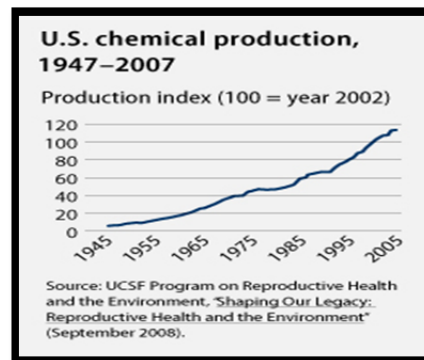
82% of students felt better informed about indoor pollution following the lesson. The majority of students were even able to identify harmful pollutants and ways to minimize their exposures.

In the future, the AIRE educational curriculum will be shared with more classes through AISD and EcoRise Youth Innovations partnerships.



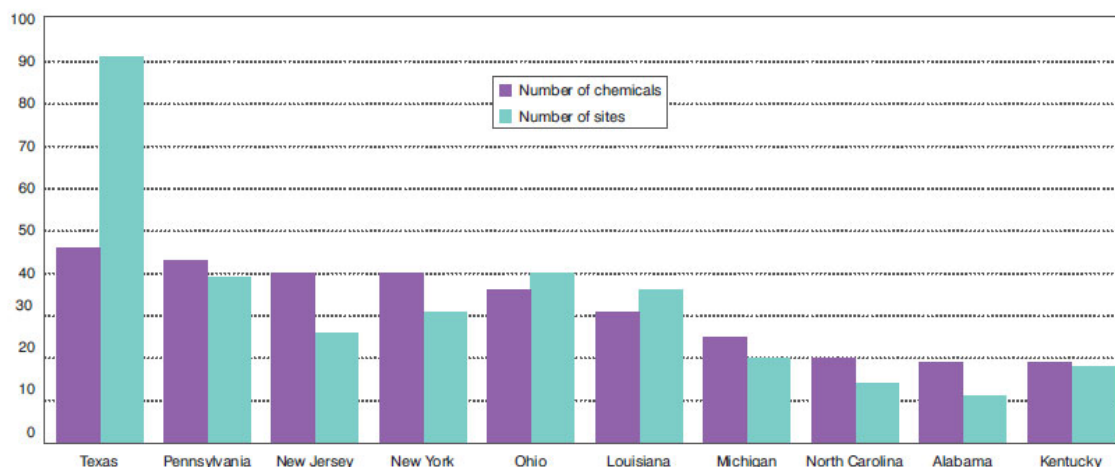
RESEARCH OF ENVIRONMENTAL ISSUES

The Cambridge English dictionary defines environment as “the air, water, and land in or on which people, animals, and plants live”. Unfortunately, human impact on the earth has allowed for significant tainting of all living creatures and our surroundings by toxic chemicals which have significantly increased in circulation over the years.



Though there was reform to the safety standards of the Toxic Substances Control Act only 3 years ago, there are still loopholes in the law allowing for many chemicals of concern to remain in distribution. The Environmental Defense Fund warns of hazardous chemicals (Mind The Store or MTS List chemicals) in ubiquitous use. In this country, it is the state of Texas that leads the way for the manufacturing and importing of such chemicals.

States with the most reported MTS List chemicals





Besides the contamination of the environment, our bodies act as chemical collection receptacles. National biomonitoring research, done by the Center for Disease Control (Fourth National Report on Human Exposure to Environmental Chemicals), demonstrates this. More surprising is that this process even seems to begin before birth. A study by the Environmental Working Group found **an average of 200 chemicals** in umbilical cord blood from **babies** born in 2004 in U.S. hospitals. Detected pollutants included pesticides, consumer product ingredients, and wastes from the burning of coal, gasoline, and garbage. Of the total of 287 chemicals detected, 180 were potentially cancer causing, 217 were neurotoxic, and 208 were known to cause abnormal development and birth defects. A toxic soup indeed.

But even the basic bodily function of breathing introduces a multitude of contaminants. In fact, we regularly breathe chemicals in the form of pollution, but not just outdoors. The U.S. Environmental Protection Agency studies of human exposure to air pollutants demonstrate that the **INDOOR** levels of pollution can be **2 to 5 times higher** than OUTDOOR levels. Moreover, comparative risk studies done by the EPA have consistently ranked indoor air pollution among the top 5 environmental risks to public health over the recent years. This is especially concerning since **most people spend approximately 90% of their time indoors**.

Chemicals adding to indoor air pollution come from many sources including tobacco and vaping smoke, pesticides, off-gassing from furniture and building materials, paint, and so on. Hazardous chemicals can often be found in products we regularly use for personal care and cleaning. Children are especially affected because they are closer, in proximity, to indoor dust which is also often breathed. In particular, **children in lower socioeconomic populations are disproportionately affected**, particularly our Latino kids.



PROJECT DETAILS

Though our research shows a bleak outlook on our environmental conditions, there is still hope. Through the education of our youth about indoor air pollution, they will be better equipped to protect themselves, their families, and their environment.

We developed an indoor air pollution educational program for 2nd, 3rd, 4th, and 5th graders aligned to the Texas Essential Knowledge and Skills. We taught the 45-minute lessons in schools with large Latino populations (Ridgetop and Woolridge Elementary schools in Austin ISD) in Spanish and English. Each lesson explained what indoor air pollution is, how we breathe it, and simple, cost-effective ways to decrease exposure. Solutions included decreased use of sprays and aerosols with synthetic chemicals (bug spray, fresheners, etc.), use of NASA researched air cleaning plants (such as aloe vera and mother-in-law's tongue), and dilution techniques (airing out the indoors). Students then took a survey to determine their knowledge after the lesson. Reinforcement of the learning was done with the following:

1. Students were given take home coloring books and crayons, created by our team, to color and review the lesson content with their parents.





2. Parents were provided with a letter in English and Spanish detailing the lesson their children were taught and how they can also decrease their family's exposure to indoor air pollution.
3. Students were encouraged to participate in the Take Care of Texas Kids Art Contest through the Texas Commission on Environmental Quality. In order to participate in the contest, kids needed to bring back completed art work and a permission form signed by their parents. Tokens for a free drink were provided by Sonic restaurants to those who turned in their art work and permission form.

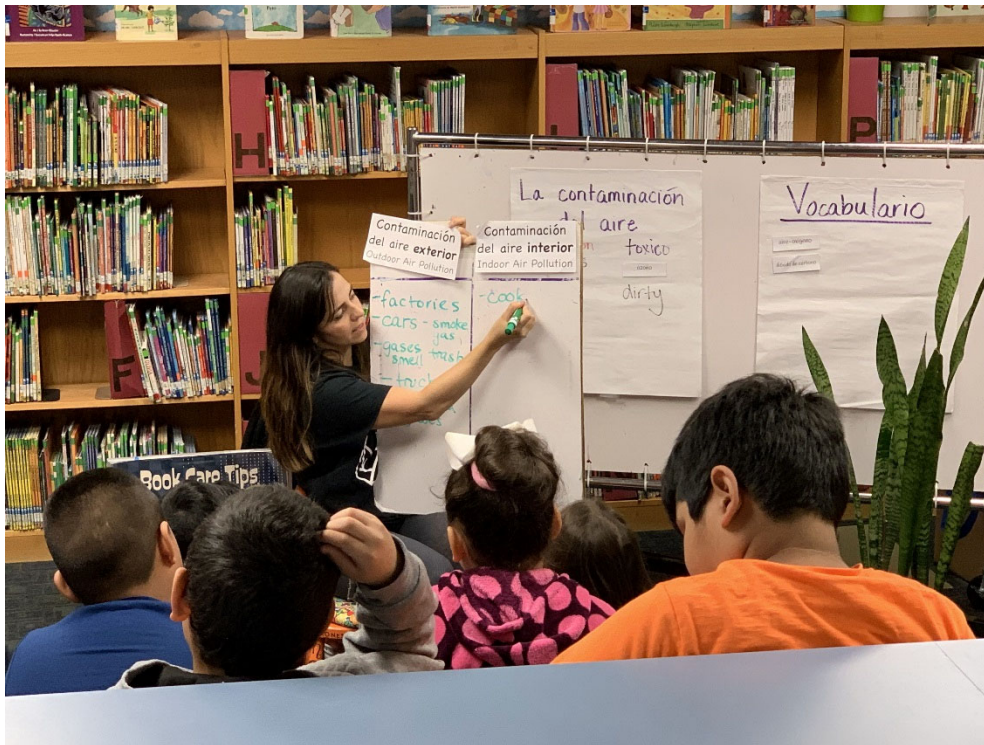
As a thank you to educators, they were provided a kit with safer cleaning supplies (including baking soda and vinegar) and an aloe vera plant to clean their classroom's air. Teachers were also given printed lesson plans for the potential education of future classes.





RESULTS

- 10 classes (164 students) from Ridgetop and Woolridge Elementary Schools were taught the 45-minute bilingual lesson.

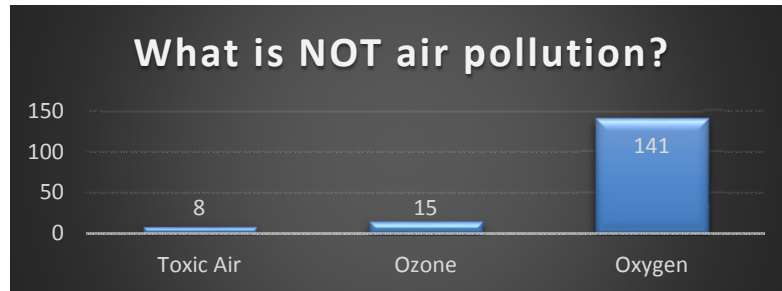


- Based on post survey results, **82% of students felt better informed** about indoor pollution after their lesson.

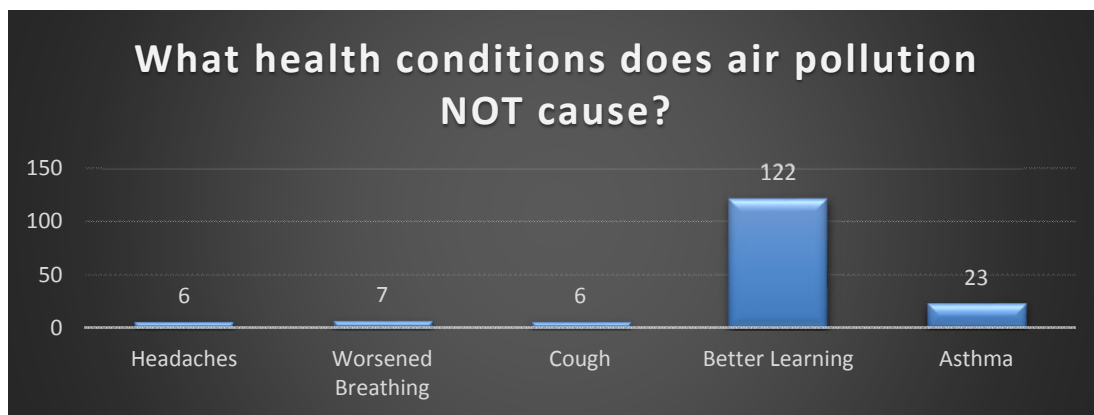




- **86% were able to differentiate harmful from non-harmful air contents.**



- **74% understood health effects of air pollution.**



- When asked, “what is the one thing you are willing to do to keep indoor air clean” for the fill in question of the survey, responses included:

“Bring plants like aloe vera inside”

“Open windows”

“Don’t use perfumes”

“Don’t use cigarettes”

“Erase Febreeze from my life”



PROJECT EVALUATION & NEXT STEPS

As a result of our youth empowerment project, our team has realized how impactful an educational program can be. Our hopes were surpassed with the engagement of the students and their desire to implement pollution reduction recommendations.

After careful review of the project, though, we would consider a few changes.

First, we would concentrate on the education of the 3rd and 4th graders. Second graders had more difficulty understanding pollution concepts and surveys while the 5th graders were well versed with pollution issues needing a more advanced curriculum.

Additionally, the surveys would be adjusted. We would include pre-surveys and decrease the complexity of the survey questions. In particular, positively phrased questions (“what is air pollution” instead of “what is not air pollution”) and a one possible answer option would likely improve understanding of the surveys.

Regardless, we feel that the lessons are still very valuable. In fact, the AIRE curriculum has been posted on the AISD website for Earth Week 2019. Additionally, EcoRise Youth Innovations will be using the curriculum to educate even more youths in the Austin area and potentially across Texas and the United States.



ACKNOWLEDGEMENTS

INDIVIDUALS

Kim Langridge, Logo Creator

Laura Crumhorn, AISD Ridgetop Elementary Librarian

Elizabeth Mikeska-Benfield, AISD Woolridge Elementary Librarian

Amanda Barnes, Illustrator

Veronica Ramírez, Video Design

SCHOOLS

Ridgetop Elementary School

Woolridge Elementary School

SPONSORS

Texas Gas Service

YMCA

American Red Cross

Austin Community College

EcoRise

Sonic

THANK YOU FOR YOUR SUPPORT!



PROJECT TEAM



Project Manager (Far Left)	Valerie Chávez, MD Chavez Healthcare	Project researcher, team guidance with vision and guidelines of project, content development
Project Administrator	Melanie Zamora Texas Gas Service	Securing of sponsorships, kit preparation, cost and budget assistance, management of materials (purchased and donated), data analysis
Finance Leader	Alex Villa American Red Cross	Cost and budget management, design and creation of promotional materials, video production
Information Leader	Vanessa Santamaria Dainton KLRU Educational Services	Development of educational campaign, bilingual educational lesson plan content and evaluation, collaboration of school partnerships
Marketing Leader (Far Right)	Antonio Luján Austin Community College	Logo development, kit prep, communications review, translation of materials, product purchase assistance, social media management



PROJECT EXPENSES & DONATIONS

Expenses

Spray bottles, vinegar, baking soda	\$24.30
Aloe vera plants	\$27.06
Sponges & Caddies	\$62.89
Printing cost of coloring books	\$431.11
TOTAL	\$545.36

Monetary Donations

Texas Gas Service	\$295.36
YMCA	\$50
American Red Cross	\$200

In Kind Donations

ACC	Flashlights, poster board
American Red Cross	Crayons with printed logo
Texas Gas Service	Reusable totes, ed materials
Sonic	Free drink tokens



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¡AIRE PURO, FAMILIA SALUDABLE!

CLEAN AIR, HEALTHY FAMILY!

COLORING BOOK

Proudly sponsored by:





¿Qué es AIRE?

Aplicar métodos sanos

Iluminar al público

Respirar aire limpio

Erradicar contaminantes

Illustrated by Amanda Barnes, Austin, TX



El aire que uno respira puede hacer una diferencia en nuestras vidas.

It is important for us to breathe good quality air, since it is essential for our lives.



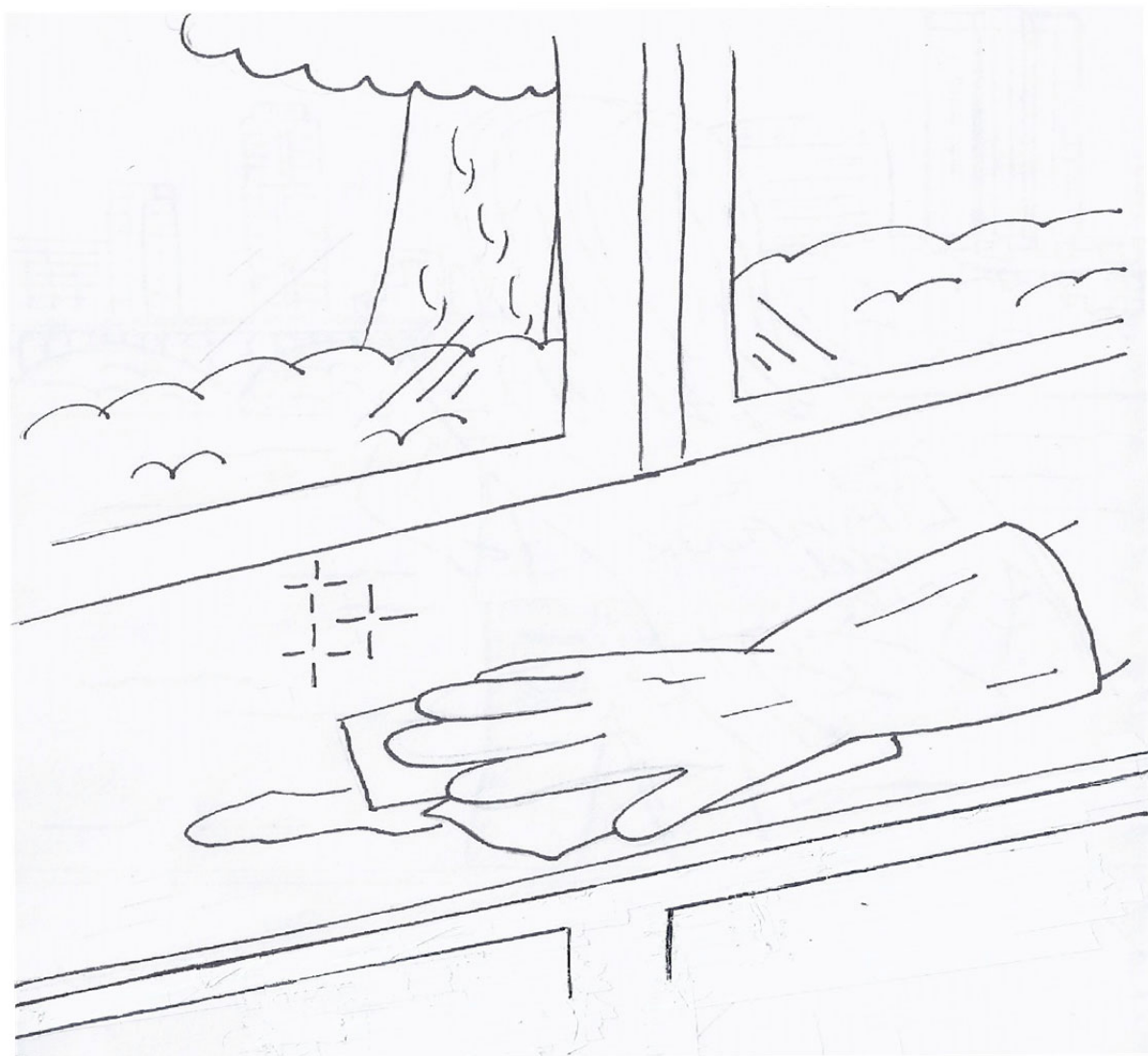
Sin saberlo, dentro de nuestros hogares e interiores pueden haber productos que afectan nuestra salud al respirarlos.

However, many household items make the air dirtier leaving less clean air for us to breathe.



Depende de nosotros hacer cambios positivos para purificar el aire. ¡Si se puede!

It is up to us to make our air cleaner. We can do it!



Paso 1 - Disminuye la contaminación en el aire. Utiliza productos que son buenos para el medio ambiente y que no dejan residuos peligrosos. Por ejemplo, usa productos de limpieza con ingredientes orgánicos.

Step 1 - Decrease the contamination in the air. Use less products that dirty the air or substitute them with items that will not harm the air. For example, use cleaning products made with organic materials.



Paso 2 - ¡Y Si! Deja que la madre naturaleza purifique el aire. Abre las ventanas o puertas para ventilar el hogar y coloca ciertas plantas en interiores que pueden ayudar a limpiar el aire.

Step 2 – And get this! Let’s allow Mother Nature to clean our air. Open the windows or doors to let outside air in the room and have certain plants around that can help clean what we breathe.



Comparte esta valiosa información con familiares y amigos.

Share this information with family and friends.



**Greater Austin Hispanic
Chamber of Commerce**

Hispanic Austin Leadership (HAL) Environmental Team:

Dr. Valerie Chávez

Vanessa Santamaría Dainton

Antonio Luján

Alex Villa

Melanie Zamora

STUDENT SURVEYS IN ENGLISH AND SPANISH



AIRE Student Questionnaire

1. What is **NOT** air pollution?

Circle ONE answer.

A: Toxic air B: Ozone C: Oxygen

2. What health conditions does air pollution **NOT cause**?

Circle ONE answer.

A: headaches B: worsened breathing C: a cough

D: better learning E: asthma

3. Which are examples of AIR POLLUTION?

Check as many as seem right.

- | | |
|---|--|
| <input type="checkbox"/> Dust mites | <input type="checkbox"/> Smoking or vaping |
| <input type="checkbox"/> Cleaning products with chemicals | <input type="checkbox"/> Plastic bags |
| <input type="checkbox"/> Perfumes | <input type="checkbox"/> Aerosol sprays |

4. What are examples of how to keep INDOOR air clean?

Check as many as seem right.

- | | |
|--|--|
| <input type="checkbox"/> Bring plants like aloe vera inside | <input type="checkbox"/> Open the windows |
| <input type="checkbox"/> Clean surfaces with baking soda & vinegar | |
| <input type="checkbox"/> Use air fresheners | <input type="checkbox"/> Collect stuffed animals |

5. After participating in The AIRE lesson, do you feel better informed about how YOU can keep indoor air clean?

Circle ONE answer.

A: Yes B: No

What is one thing that you are willing to do to keep INDOOR AIR clean?



AIRE Cuestionario de Estudiante

1. ¿Cual **NO** es contaminación del aire?

Circula 1 respuesta.

A: Aire tóxico B: Ozono C: Oxígeno

2. ¿Qué condiciones de la salud **NO SON** causadas por la contaminación del aire? *Circula 1 respuesta.*

A: dolores de cabeza B: empeoramiento de la respiración
C: tos D: mejor aprendizaje E: asma

3. ¿Cuáles son ejemplos de CONTAMINACIÓN DEL AIRE?

Marque tantos como parezca correcto.

- | | |
|---|---|
| <input type="checkbox"/> Ácaros de polvo | <input type="checkbox"/> Fumar o vapear |
| <input type="checkbox"/> Productos de limpieza con químicos | <input type="checkbox"/> Perfumes |
| <input type="checkbox"/> Bolsas de plástico | <input type="checkbox"/> Productos de aerosol |

4. ¿Cuáles son ejemplos de cómo mantener el aire interior limpio? *Marque tantos como parezca correcto.*

- | |
|--|
| <input type="checkbox"/> Entrar las plantas como el aloe vera al interior |
| <input type="checkbox"/> Abrir las ventanas <input type="checkbox"/> Use ambientadores |
| <input type="checkbox"/> Limpie las superficies con bicarbonato de sodio y vinagre |
| <input type="checkbox"/> Recolectando animales de peluche |

5. Después de participar en la lección de AIRE, ¿se siente mejor informado acerca de cómo USTED puede mantener limpio el aire interior? *Circula 1 respuesta.*

A: Sí B: No

¿Qué es una cosa que está dispuesto a hacer para mantener limpio el AIRE INTERIOR?



Aplicar métodos sanos
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Dear Educator,

Thank you for your consideration in bringing the important topic of indoor air pollution to your students' awareness. According to the EPA, a growing body of scientific evidence has indicated that the air within homes and other buildings can be more seriously polluted than the outdoor air in even the largest and most industrialized cities. Research also indicates that people spend approximately 90 percent of their time indoors. Thus, for many people, the risks to health may be greater due to exposure to air pollution indoors than outdoors.

People who may be exposed to indoor air pollutants for the longest periods of time are often those most susceptible to the effects of indoor air pollution. Groups mostly affected include the elderly and the chronically ill, those suffering from respiratory or cardiovascular disease, and **our youth**. Physically healthy students yield to all kinds of benefits specifically higher attendance rates and students who are ready to learn.

The bilingual lesson plan aligned with the Texas Essential Knowledge and Skills (TEKS) provides an easy to implement lesson to bring awareness of the importance of clean air and how it affects their health. Students will demonstrate an understanding of this concept through a guided discussion about outdoor and indoor pollution, how it affects their health, and ways to minimize indoor pollution. We hope they will be able to apply their knowledge to their classroom learning environment and then hopefully their home environment.

This kit contains the main lesson plan with a read aloud connection, a classroom cleaning kit to empower your students to physically take action, a 'school to home connection' which includes a reproducible parent letter and student book, and resources and recommendations accessible online from expert local and national environmental advocacy organizations working to improve our air quality.

Thank you and SALUD to good health to you and your students!

The AIRE team



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Dear guardian,

Your child participated in an AIR POLLUTION lesson conducted by The Hispanic Austin Leadership (HAL) Program Environment Team.

Education on pollution is important because many are not aware that we are exposed to 2-3 times more pollution INDOORS than outdoors. In fact, the Environmental Protection Agency has identified INDOOR air pollution as one of the top five health concerns. Besides worsening of respiratory conditions, pollution can even interfere with a child's ability to learn.

However, there are solutions. As part of the program, your child has learned what air pollution is and ways to counteract exposure. We also invite you to be part of the AIRE team by talking to your child about what they learned and encouraging them to read and color in the provided coloring book.

There are additional steps that you can take to decrease your family's exposure to pollutants in your home:

- Air out the house by opening windows. Part of the solution to pollution is dilution.
- Keep plants inside (like aloe vera, mother-in-law's tongue, and spider plant) which can clean the air according to NASA research.
- Avoid aerosolized products like air fresheners, hairspray, and spray deodorant.
- Decrease your exposure to synthetic fragrances like those in laundry detergent and fabric softener. Fragrance-free products are better options.
- If you smoke or vape, do so outside or stop altogether.
- Limit rugs, carpeting, and other objects that can collect dust and pollutants easily.
- Take your shoes off indoors and keep them outside.
- Use safer cleaning products, like baking soda sprayed with white vinegar, because some strong cleaning products can easily harm the lungs. You can also download the Healthy Living app (www.ewg.org/apps/) to choose products that are safer to use.

We thank you for being part of the team because everyone deserves the right to breathe clean air.

Team AIRE



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Estimado padre/guardián,

Su hijo/a ha participado en el programa de CONTAMINACIÓN DEL AIRE conducido por el grupo para el mejoramiento del medio ambiente del Hispanic Austin Leadership (HAL) Program.

La educación sobre la contaminación es importante porque muchos no son conscientes de que estamos expuestos a 2-3 veces más tóxicos en el interior que en el exterior. De hecho, la Agencia de Protección Ambiental ha identificado la contaminación del aire en interiores como uno de los cinco principales problemas de salud. Además de empeorar las condiciones respiratorias, la contaminación puede incluso interferir con la capacidad de aprendizaje de los pequeños.

Sin embargo, hay soluciones. Como parte del programa, su hijo/a ha aprendido acerca de la contaminación del aire y cómo combatir la exposición a los tóxicos. También invitamos a nuestros padres a formar parte del equipo de AIRE al hablar con su hijo/a sobre lo que aprendieron y alentarlos/a a leer y colorear el libro que viene incluido en este paquete.

Hay pasos importantes que puede tomar para disminuir la exposición de su familia a los contaminantes en su hogar:

- Ventile la casa abriendo las ventanas. Parte de la solución a la contaminación es la dilución.
- Mantenga las plantas adentro (como la sábila, la lengua de suegra y la planta de araña) las cuales pueden limpiar el aire según estudios realizados por la NASA.
- Evite productos en aerosol como ambientadores, spray para detener el cabello y desodorantes en aerosol.
- Disminuya su exposición a las fragancias sintéticas como las de detergente para ropa y suavizante de telas. Los productos sin perfume (y para prevenir alergias) son mejores opciones.
- Si fuma cigarro tradicional o electrónico, hágalo afuera o deténgase por completo.
- Limite las alfombras, los tapetes y otros objetos que puedan acumular polvo y contaminantes fácilmente.
- Use productos de limpieza más seguros, como bicarbonato de sodio con vinagre blanco, ya que algunos productos de limpieza fuertes pueden dañar los pulmones con facilidad. También puede descargar la aplicación Healthy Living (www.ewg.org/apps/) para elegir productos que sean más seguros de utilizar en casa.

Les damos las gracias por unirse a nuestros esfuerzos porque cada uno de nosotros merecemos respirar aire puro.

El Equipo AIRE